

MOTOR AGE

Stutz Sweeps Card at Elgin

Gil Anderson Captures Elgin Trophy and Earl Cooper Wins C. A. C. Cup in Record Time

By J. C. Burton

ELGIN, ILL., August 21—The eagle screamed at Elgin yesterday and today. Two American cars, bearing the winged Stutz trademark, and two American drivers, Earl Cooper of California, and Gil Anderson of Indiana, more than monopolized the honors in the sixth annual Elgin road races, shattered the watch city



THE VICTORS

Earl Cooper, at left, and Gil Anderson, at right, feed out of Harry Stutz's hand

Oldfield's French Delage. The band played "Dixie" and the stars and stripes fluttered with justifiable pride as the Stutz thoroughbreds of steel roared past the grand-

stand to made-in-America triumphs. course record and humbled two speed importations from war-swept Europe, Ralph de Palma's German Mercedes and Barney

stand to made-in-America triumphs.

Earl Cooper, the young speed Lochinvar, who came out of the West to break Ralph de Palma's hold on the Chicago Automobile Club cup, was crowned with the laurel in yesterday's race. He covered the 301.84 miles in 4 hours, 1 minute, 32 seconds, an average of 74.97 miles per hour. Gil Anderson followed his teammate's excellent example today, winning the Elgin National trophy in 3 hours, 54 minutes, 26 seconds and increasing Cooper's average of yesterday to 77.25 miles an hour for the same distance. Both smashed the course record of 73.6 miles per hour, established by de Palma in the 1914 C. A. C. cup event.

The Damon and Pythias Team

Damon and Pythias, generally regarded as the greatest teammates of all time, have nothing on Cooper and Anderson. The Stutz drivers had a close monopoly on the honors of the Mercurian fete and divided the fruits of victory fifty-fifty. When Cooper won, Anderson was second. When Anderson got the checkered flag of triumph in the Elgin trophy contest, it was Cooper that trailed him over the line. For a brother act put on without a rehearsal, the Cooper-Anderson team scored a decided knockout that netted them \$5,300 of the total \$6,000 in prize money.

Eddie O'Donnell, captain of the Duesenberg team, and Barney Oldfield, driving the Delage, divided what prize money was left after Anderson and Cooper had sacked the cash drawer. O'Donnell was third in the Elgin trophy race and Oldfield was third in the chase for the C. A. C. cup,

C. A. C. CUP RACE

Pos.	Car & Driver	Time	M.P.H.
1	Stutz, Cooper	4:01:32	74.97
2	Stutz, Anderson	4:05:04	73.85
3	Delage, Oldfield	4:09:55	72.46
4	Ogren, Alley	4:14:29	71.16
5	Duesenberg, O'Don'l	4:15:40	70.83
Du Chesneau, Brown, out at 209 miles, burned out bearing.			
Duesenberg, Henderson, out at 184 miles, broken valve spring.			
Mercedes, de Palma, withdrew at 176 miles.			
Cornellian, Justen, out at 92 miles, stripped gear.			

ELGIN TROPHY RACE

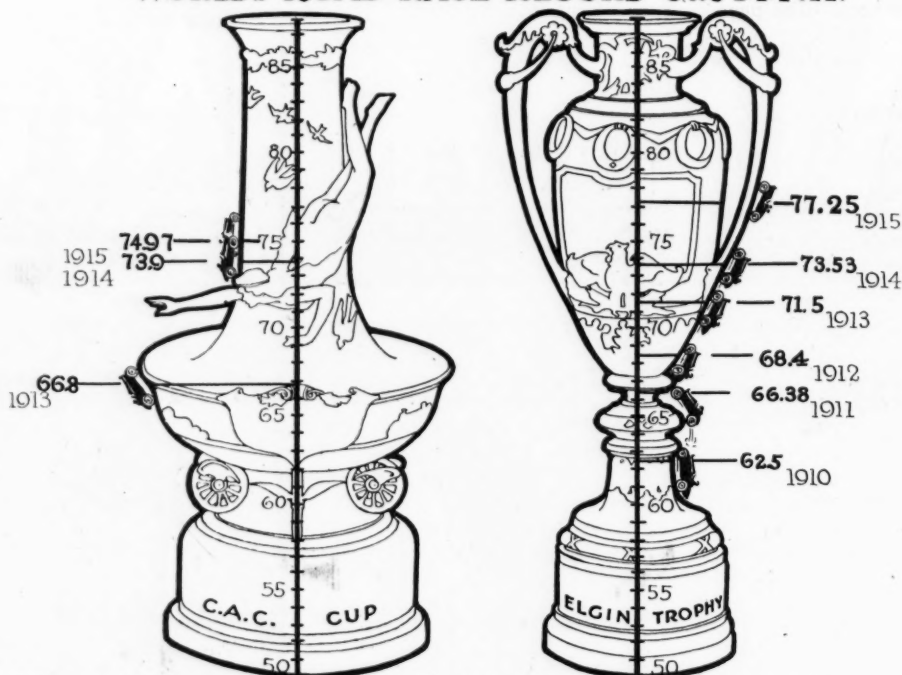
Pos.	Car & Driver	Time	m.p.h.
1	Stutz, Anderson	3:54:25	77.25
2	Stutz, Cooper	3:57:29	76.25
3	Duesenberg, O'Don'l	3:59:01	75.76
4	Mercedes, dePalma	3:59:16	75.69
Mercer, Henning, flagged at 268 miles.			
Delage, Oldfield, flagged at 268 miles.			
Duesenberg, Chandler, flagged at 234 miles.			
Du Chesneau, Jones-Brown, flagged at 234 miles.			
Duesenberg, Henderson, out at 150 miles, cracked timing gearcase.			
Stutz Special, Burt, out at 108 miles, stuck valves.			
Lozier, Robillard, out at 83 miles, disqualified because of dangerous rims.			
DeDietrich, Buzane, out at 8 miles, broken crankshaft.			



each receiving \$350 for their desperate but futile pursuit of the flying Stutzes.

For the first time in the history of the Elgin meet since 1911, Ralph de Palma failed to finish inside the money on either day. The favorite for both events before the starting bombs were fired by virtue of his dual victories on the Kane county course last year, the Italian failed to justify the odds placed on him. The best he could do was to finish fourth this afternoon, 15 seconds astern Eddie O'Donnell's Duesenberg. He set the pace on the first four laps yesterday and then spent more than an hour at his pit waiting for a new rocker arm to replace a broken one that was rendered hors de combat on his fifth circuit of the course. Spectators cheered as he gamely resumed the race after repairing his car, but he had no chance of overtaking Cooper or Anderson, who had a lead of 91 miles on the Mercedes, and withdraw after completing 176 of the 301 miles.

WORLD'S ROAD RACE RECORD 87.8 M.P.H.



WINNERS OF THE ELGIN RACES HAVE INCREASED THE AVERAGE EACH YEAR

The accompanying chart shows how the speed of the Elgin victors has increased annually in each of the classics and the gap between Anderson's and Cooper's marks last week and the world's road racing record of 87.8 miles an hour, made by Pullen in a Mercer at Corona in 1914. The bases of the two cups rest on the 50-miles-an-hour mark, the average speed of the winner of the first road race held in the middle west, the Cobe trophy event run over the Crown Point course in 1909

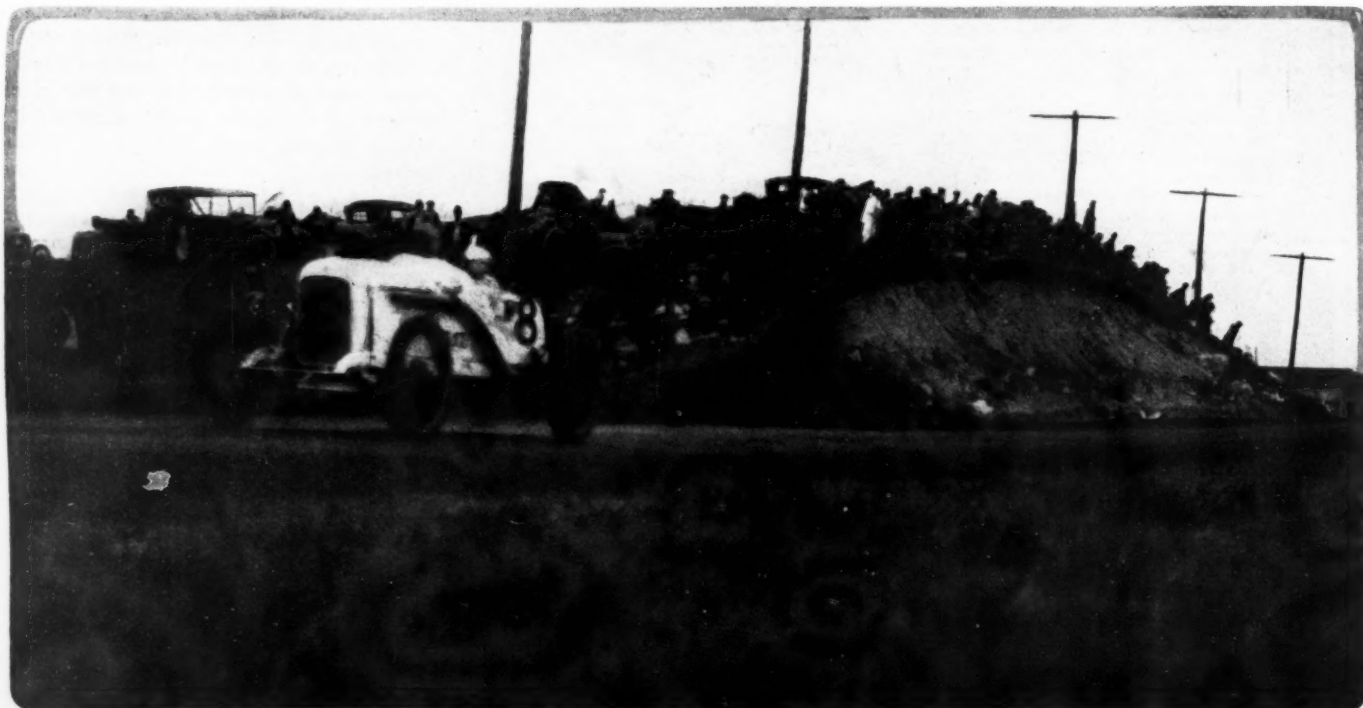
De Palma's only consolation in defeat is that he covered the fastest lap of the two days of racing on his thirty-sixth circuit this afternoon. In a last desperate attempt to pass O'Donnell's Duesenberg and finish inside the money, the Italian made the 8.38 miles in 6 minutes, 15 seconds, an average of 80.49 miles per hour. This is not a lap record, however, the late

and 32 seconds over O'Donnell. The stubborn fight for third money was measured in seconds, 15 seconds to be exact.

All four cars that got the checkered flag this afternoon—Anderson's Stutz, Cooper's Stutz, O'Donnell's Duesenberg and de Palma's Mercedes—bettered the course record of 73.6 miles per hour. The difference between the average of the victor,

Spencer Wishart attaining a speed of 81.4 miles per hour for one circuit of the course last year.

The finish of today's race for the Elgin National trophy was the most spectacular climax in the annals of road racing in the middle West. There was less than 5 minutes difference between the times of the first and fourth car to complete the 301 miles, de Palma bringing the Mercedes over the wire 4 minutes and 51 seconds after the victorious Stutz got the checkered flag. Cooper, who was second, lost to Anderson by 3 minutes and 4 seconds and the Californian had an advantage of only 1 minute



EARL COOPER, WINNER OF THE C. A. C. CUP, SPEEDS DOWN THE HOME STRETCH LEG AND PASSES THE CROWDS GATHERED ON BRITTON'S HILL

77.25 miles per hour, and that of the Mercedes was 1.56 miles per hour. The pace-making of the two Stutzes and the pursuit of the white leaders by O'Donnell and de Palma were furious.

Friday Race Less Desperate

Yesterday's race was not as desperately fought. With the Mercedes eliminated early in the struggle, there was no car in the field fast enough to challenge the lead of the Stutzes provided they held up under the strain, which they did, and Cooper and Anderson were masters of the situation at all times. Neither driver had to extend his car to the limit in order to keep out of the reach of Oldfield, whose Delage proved to be more than 2 miles per hour slower than the winning Stutz.

The two Stutz cars made a wonderful showing on both days. They seemed to be the personification of mechanical perfection. Only once were the bonnet straps unbuckled on either car, Anderson lifting the hood of his mount and examining the engine when it started to miss on the twenty-fifth lap of Friday's contest. He decided to make no adjustments, however, and continued the family quarrel with Cooper. He changed cars on Saturday, driving a new Stutz just recently completed, in the contest for the Elgin National trophy.

Anderson did not change a single tire on either of his cars. Cooper's record in this respect was almost as good, the Californian stopping once for a wheel in his 602 miles of high-speed driving. That stop was made on Friday, when he was leading at 275 miles and had only three more laps to go.

Both Anderson and Cooper stopped once at the pits for gasoline in each race. They lost little time, however, fuel being taken on in 15 or 20 seconds. In fact, what little work the Stutz pitmen had to do was performed at lightning speed.



GIL ANDERSON, ELGIN TROPHY VICTOR, ROUNDING HAIRPIN TURN ON HIS WINNING DRIVE OF SATURDAY

The Stutz cars were easily the class of the field in each event. They had the stamina for which they are noted and showed more speed than they have in any previous event this season, considering the difference in competing on coun-

try roads and on highly-banked speedways.

Driving white mounts and wearing white duck suits and hoods, Cooper and Anderson were the Klu Klux Klansmen of speed yesterday and today. They struck terror in the hearts of their rivals and gave no quarter. They were both skillful and daring. They had supreme confidence in themselves and in their cars. Such psychology plus mechanical fitness proved an invincible combination.

Cooper a Revelation

Cooper's driving in both races was a revelation to the speed fans of the middle west. Before he was sent away yesterday, he had never competed in a road race east of the Rocky mountains although it was in this class of competition on the Pacific coast that he gained his fame and much of his fortune. His achievements at Elgin showed him to be a road driver as resourceful and heady as the mighty de Palma, who is commonly considered the greatest of all American pilots on a country highway. If there was any doubt that Cooper deserved the title of road racing champion in 1913, when he scored dual victories at both Tacoma and Corona and captured the Santa Monica classic, that doubt was dispelled for all time here.

The work of Gil Anderson is deserving of equal praise. Although not as famous as his teammate, Cooper, or the Big Three

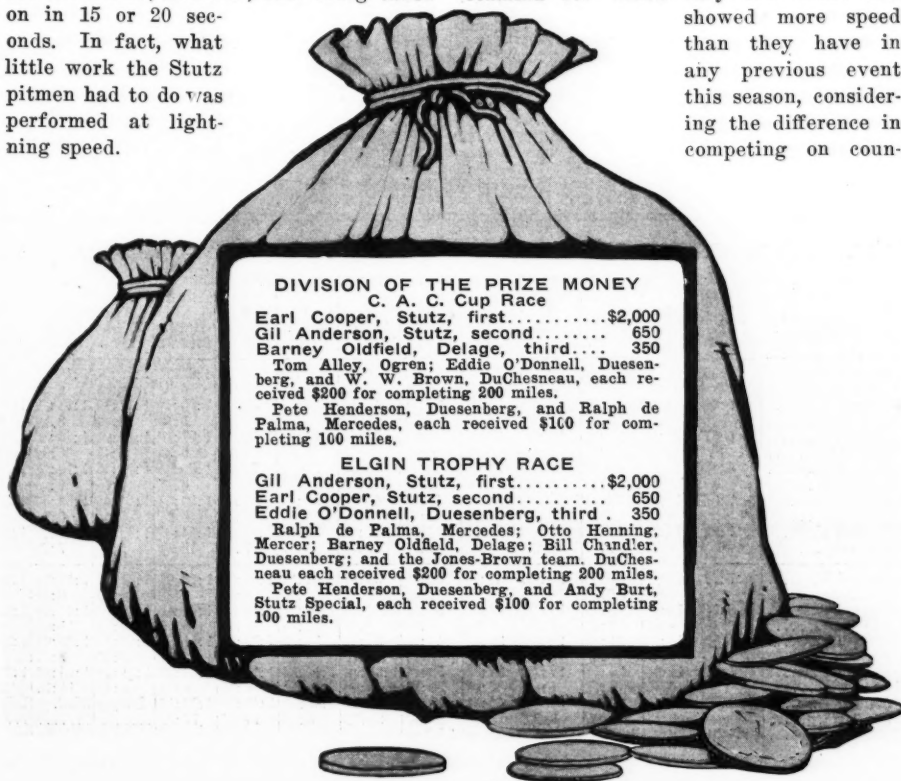
DIVISION OF THE PRIZE MONEY

C. A. C. Cup Race

Earl Cooper, Stutz, first.....\$2,000
Gil Anderson, Stutz, second..... 650
Barney Oldfield, Delage, third.... 350
Tom Alley, Ogren; Eddie O'Donnell, Duesenberg, and W. W. Brown, DuChesneau, each received \$200 for completing 200 miles.
Pete Henderson, Duesenberg, and Ralph de Palma, Mercedes, each received \$100 for completing 100 miles.

ELGIN TROPHY RACE

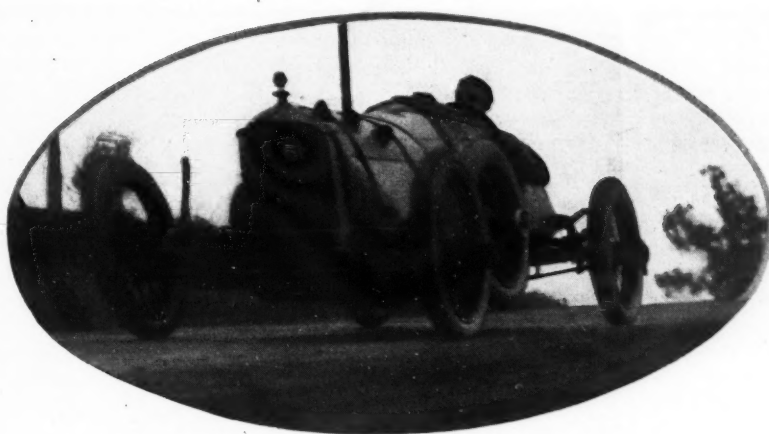
Gil Anderson, Stutz, first.....\$2,000
Earl Cooper, Stutz, second..... 650
Eddie O'Donnell, Duesenberg, third. 350
Ralph de Palma, Mercedes; Otto Henning, Mercer; Barney Oldfield, Delage; Bill Chandler, Duesenberg; and the Jones-Brown team. DuChesneau each received \$200 for completing 200 miles.
Pete Henderson, Duesenberg, and Andy Burt, Stutz Special, each received \$100 for completing 100 miles.



of 75 miles an hour would crown him with the bay and laurel. The velocity shown by Anderson and Cooper surprised him. He waited for the Stutzes to break down, but he waited in vain. When he increased his speed, it was too late. The pace-makers had too great an advantage for the Mercedes to overcome.

There was very little mechanical trouble encountered by the contenders for the C. A. C. cup and the Elgin National trophy, only seven out of a total of twenty-one starters in both races being eliminated before the checkered flag waved over the victorious Norseman.

In yesterday's contest, Brown's Du Chesneau, Henderson's Duesenberg and Justen's Cornelian were the unfortunates. The Du Chesneau burned out a bearing after completing 209 miles, the Duesenberg suffered a broken valve spring at the end of 108 miles and the Cornelian was docked with stripped joint at 92 miles. Tom Alley, in the Ogren, and Eddie O'Donnell,



EDDIE O'DONNELL'S DUESENBERG, THIRD IN SATURDAY'S ELGIN TROPHY CLASSIC

with the Duesenberg, covered the 301 miles but were outside the prize money, finishing fourth and fifth respectively.

Three cars fell by the wayside today. Buzane's DeDietrich breaking a crankshaft on the first lap, Burt's Stutz Special going out with stuck valves after completing 108 miles and Henderson's Duesenberg cracking a timing gearcase at the half-way mark. Robillard's Lozier was disqualified for throwing rims and Billy Chandler's Duesenberg caught on fire, but

the flames were extinguished and Chandler resumed the race. Four cars were flagged after de Palma had finished, Henning's Mercer and Oldfield's Delage running 268 miles and Chandler's Duesenberg and the Du Chesneau covering 234 miles before they were called in by Starter Wagner.

For the first time in the annals of American road racing, the drivers of also-rans received a monetary consideration for their labors. Each 100 miles finished was worth \$100 at Elgin this year. The promoters took a gambler's chance on the stamina of the cars and lost \$2,000 on the plunge. Yesterday, Tom Alley, Eddie O'Donnell and W. W. Brown each received \$200 for completing 200 miles and Pete Henderson and Ralph de Palma each added \$100 to his bank roll in return for covering a century. In the Elgin National trophy race re Palma, Otto Henning, Oldfield, Chandler and the Jones-Brown team that piloted the Du Chesneau each were given

TROPHY AT ELGIN, AUGUST 20, WON BY COOPER IN A STUTZ AT A SPEED OF 74.979 MILES PER HOUR

[illegible]

TROPHY AT ELGIN, AUGUST 21, WON BY ANDERSON IN A STUTZ AT A SPEED OF 77.256 MILES PER HOUR

15 125 M. 4050 Ft.	16 134 M. 800 Ft.	17 142 M. 2830 Ft.	18 150 M. 4860 Ft.	19 159 M. 1610 Ft.	20 167 M. 3640 Ft.	21 176 M. 390 Ft.	22 184 M. 2420 Ft.	23 192 M. 4450 Ft.	24 201 M. 1200 Ft.	25 209 M. 3230 Ft.	26 217 M. 5260 Ft.	27 226 M. 2010 Ft.	28 234 M. 4040 Ft.	29 243 M. 790 Ft.	30 251 M. 2820 Ft.	31 259 M. 4850 Ft.	32 268 M. 1600 Ft.	33 276 M. 3630 Ft.	34 285 M. 380 Ft.	35 293 M. 2410 Ft.	36 301 M. 4440 Ft.	Miles Per Hour
1:37:44	1:44:07	1:50:26	1:56:49	2:03:15	2:09:38	2:16:34	2:23:09	2:29:33	2:35:56	2:42:20	2:48:48	2:55:19	3:01:45	3:08:18	3:14:51	3:21:22	3:27:54	3:34:27	3:41:00	3:47:41	3:54:25	77.256
6:22	6:23	6:19	6:23	6:26	6:23	6:56	6:35	6:24	6:23	6:24	6:28	6:31	6:26	6:33	6:33	6:31	6:32	6:33	6:33	6:41	6:44	
1:37:57	1:44:48	1:51:05	1:57:32	2:04:03	2:10:35	2:17:12	2:24:12	2:30:59	2:37:38	2:44:26	2:51:20	2:57:52	3:04:32	3:11:07	3:17:49	3:24:19	3:31:09	3:37:41	3:44:21	3:50:58	3:57:29	76.258
6:29	6:51	6:17	6:27	6:31	6:32	6:37	7:00	6:47	6:39	6:48	6:54	6:32	6:40	6:35	6:42	6:30	6:50	6:32	6:40	6:37	6:31	
1:40:26	1:46:57	1:53:36	2:00:08	2:06:47	2:13:20	2:19:49	2:26:18	2:32:45	2:39:18	2:46:27	2:52:35	2:59:11	3:05:47	3:12:17	3:18:51	3:25:23	3:33:21	3:39:41	3:46:00	3:52:41	3:59:01	75.769
6:37	6:31	6:39	6:32	6:41	6:33	6:29	6:29	6:27	6:33	7:09	6:18	6:36	6:36	6:30	6:34	6:32	7:58	6:20	6:19	6:41	6:20	
1:40:14	1:46:52	1:53:41	2:00:23	2:06:59	2:13:25	2:20:05	2:26:40	2:33:50	2:40:56	2:47:36	2:54:21	3:01:09	3:08:00	3:14:35	3:21:11	3:27:31	3:33:54	3:40:13	3:46:44	3:53:01	3:59:16	75.690
6:36	6:38	6:49	6:42	6:36	6:24	6:42	6:35	7:10	7:06	6:40	6:45	6:48	6:51	6:35	6:36	6:20	6:23	6:19	6:31	6:15		
1:43:55	1:51:08	1:59:44	2:06:33	2:13:21	2:20:05	2:26:53	2:33:36	2:40:18	2:46:59	2:53:39	3:01:03	3:09:40	3:16:55	3:24:27	3:32:03	3:50:27	Runnin	g at Fin	ish			
8:43	7:13	8:36	6:49	6:48	6:44	6:48	6:43	6:42	6:41	6:40	7:24	8:37	7:15	7:32	7:36	18:24	Runnin	g at Fin	ish			
1:51:30	1:58:44	2:05:45	2:13:04	2:20:17	2:27:23	2:34:22	2:41:26	2:48:32	2:55:58	3:05:14	3:17:21	3:24:47	3:32:01	3:39:25	3:46:38	3:53:54	Runnin	g at Fin	ish			
7:15	7:14	7:01	7:19	7:13	7:06	6:59	7:04	7:06	7:26	9:16	12:07	7:26	7:14	7:24	7:13	7:16						
1:48:47	1:55:29	2:02:15	2:09:39	2:17:55	2:25:56	2:42:58	2:51:16	2:58:48	3:06:34	3:14:46	3:22:29	3:29:30	Runnin	g at Fin	ish							
6:39	6:42	6:46	7:24	8:20	17:57	7:02	8:18	7:32	7:46	8:12	7:43	7:01										
2:12:34	2:21:32	2:30:19	2:39:46	2:48:46	2:57:24	3:05:43	3:14:23	3:23:01	3:31:39	3:40:07	3:48:45	3:57:53	Runnin	g at Fin	ish							
8:36	8:58	8:47	9:27	9:00	8:38	8:19	8:40	8:38		8:28	8:38	9:08										
1:47:56	1:55:27	2:05:08	2:18:51	Out.	Cracked	Timing	Gear C	ase														
7:23	7:31	9:41	13:43		Out.	Stuck V	alve.															

\$200 and \$100 was handed Henderson and Andy Burt.

Thus, only three drivers, Justen, Robillard and Buzane, who were forced out of the races before they had completed the first 100 miles, failed to profit through competition at Elgin.

A low tire consumption record was established at Elgin yesterday and today, only fourteen extra casings being required to carry the fourteen cars through the two races. In the C. A. C. cup event, but three of the nine drivers stopped for new wheels. Oldfield changed a rear tire on the first lap, Cooper stopped for a Silvertown on his thirty-third circuit of the course and de Palma had a blowout on the back stretch after he had repaired his disabled Mercedes.

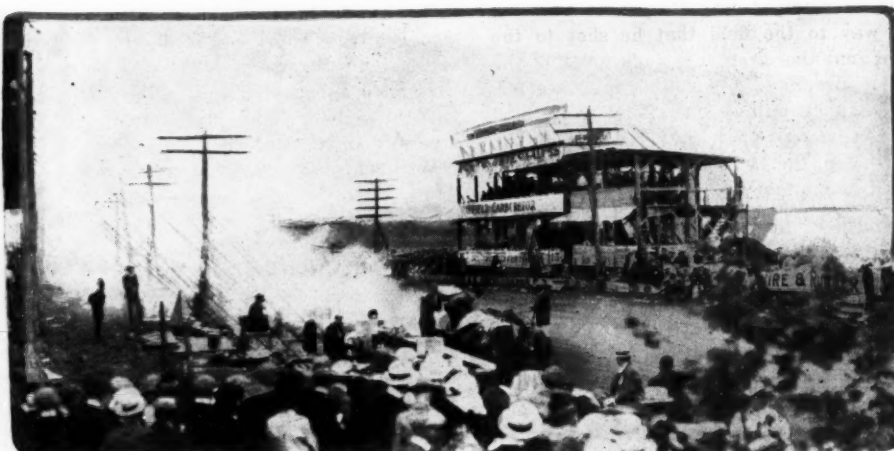
The increased speed in the Elgin National trophy race had a tendency to increase the rubber mortality rate of yesterday, five drivers making eleven tire changes. Oldfield's Delage wore out four casings in the 301 miles, Henderson, Chandler and O'Donnell each put on two new wheels and Robillard came to a halt at his pits once for a tire.

This wonderful tire record was due to two factors, the excellence of the course and the low temperature. The roads were as smooth as the proverbial billiard table and the sun, when it peeked timidly from behind the banks of gray clouds, radiated very little heat.

Free from Accidents

There were no accidents, even of a minor nature, in either race despite the high speed and the keen competition. In yesterday's contest, Barney Oldfield in a spectacular brush down the home stretch with de Palma and Anderson, took the first corner without throttling down and skidded into the protecting barrier of baled straw, but neither driver nor car was injured. On his next to the last lap this afternoon, Ralph de Palma failed to negotiate this same turn and went off the course. This mishap was costly as the Italian was only 15 seconds behind O'Donnell at the finish and he lost several seconds getting back on the road.

Although there were eleven entries for



O'DONNELL STOPS AT THE PITS FOR GASOLINE ON THE TWENTY-FOURTH LAP OF SATURDAY'S RACE

the C. A. C. cup race of yesterday, there were but nine cars on the starting line when the bomb exploded. Caleb Bragg, who had agreed to drive de Palma's Stutz, failed to appear and the car was scratched, and Patrick punched a hole in the crankcase of his Mercer in practice and was forced to withdraw.

De Palma the Favorite

De Palma, an odds-on favorite, shot to the front on the first lap which he covered in 6 minutes, 33 seconds. He maintained this advantage on the second and third circuits of the course but the next time around stopped to replace a blown-out spark plug and Cooper passed him. After losing 2 minutes at his pit, the Italian started in pursuit of the Californian, but the rocker arm broke on the fifth lap and the Mercedes was destined to be an also-ran for the first time since it has been a starter at Elgin.

With de Palma waiting for a new rocker arm, Anderson and Cooper started a little family feud of their own. Cooper had a lead of 56 seconds on his teammate at the end of 50 miles and both were going great guns. The Californian's average was 76.42 miles per hour.

In the next 50 miles, Anderson cut down this lead to 9 seconds, gaining from 1 to 5 seconds on each circuit of the course.

The average had dropped to 75.65 miles per hour and Alley's Ogren was in third place, 14 seconds ahead of Oldfield's Delage.

At the half-way mark, 150 miles, Anderson had passed Cooper, but the Norseman's advantage was only 3 seconds. Oldfield also gained at this stage of the race and was in third place with Alley and O'Donnell trailing. By spectacular spurts, Anderson put the average for 150 miles at 76.8 miles per hour.

At the completion of 201 miles, or twenty-four laps, Anderson still held the lead, having increased his advantage to 1 minute and 35 seconds through furious driving and 15 seconds lost by Cooper at the pit in taking on gas on his twenty-first lap.

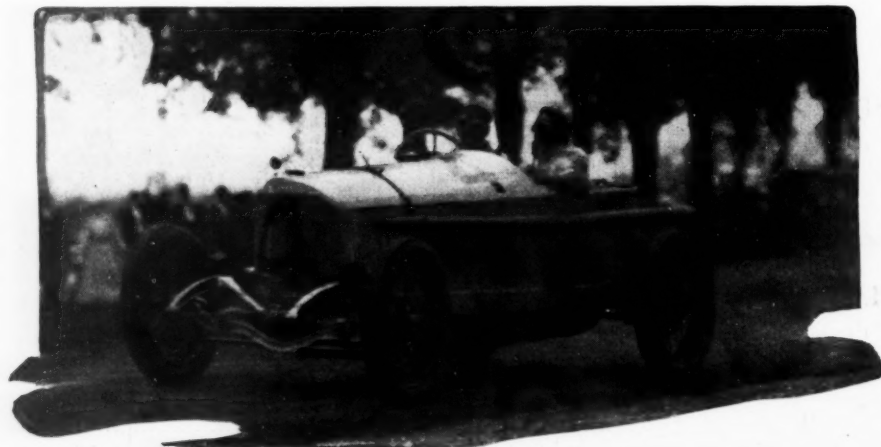
On his twenty-fifth lap, however, Anderson stopped to make an examination of his motor which had started to miss and Cooper shot ahead of him, never to be overtaken. Oldfield and Alley also halted to take on fuel, but both were too far behind to be menacing factors.

Cooper in Lead

At the end of 25 miles Cooper had a lead of more than 5 minutes on Anderson, his average being 75.69 miles per hour, but a stop for a tire on the thirty-third lap, gave Anderson an opportunity to cut down the advantage of his teammate to 3 minutes. Anderson then decided to play safe and take no chances of not finishing and on his final three laps Cooper increased his lead to 3 minutes and 32 seconds.

All of yesterday's starters, with the exception of the Cornelian which was not entered today and the Ogren that was scratched because of a broken rocker arm, were contenders for the Elgin National trophy. In addition, there were five cars groomed especially for today's contest—Chandler's Duesenberg, Robillard's Lozier, Burt's Stutz Special, Henning's Mercer and Buzane's De Dietrich.

Despite his failure to finish yesterday de Palma was again the favorite today but history repeated for the Stutzes but not for the Mercedes, and Anderson and Cooper once more monopolized the spotlight.



RALPH DE PALMA AND HIS GERMAN MERCEDES THAT FAILED TO FINISH INSIDE THE MONEY IN EITHER RACE

So accustomed was Cooper to showing the way to the field that he shot to the front on the first lap and covered the initial circuit of the course in 3 seconds less than de Palma. O'Donnell was third and Anderson fourth. At the end of the fourth lap, the Californian was 36 seconds ahead of his teammate, Anderson.

Cooper held the lead at the completion of 50 miles, but there was not much of a gap between his car and Anderson's Stutz, which was less than half a minute astern. Cooper's average for this distance was 76.82 miles per hour; Anderson's, 76.09 miles per hour; de Palma's, 75.24 miles per hour, and O'Donnell's, 74.34 miles per hour.

On the ninth lap, Anderson started to overhaul Cooper. In three circuits of the course, he reduced the Californian's advantage to 12 seconds. De Palma and O'Donnell were fighting desperately for third place, the Italian having a lead of 49 seconds on the Duesenberg driver at the completion of eleven laps.

Anderson passed Cooper on the twelfth lap and lead at the end of 100 miles. It was a most slender margin, only 2 seconds separating the two white cars. De Palma still was running in third place, but was losing ground. He was 1 minute 31 seconds behind the pace-making Stutz and but 30 seconds ahead of the rapidly gaining Duesenberg.

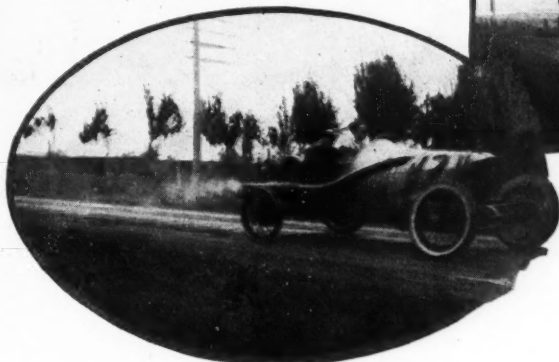
Once in front, Anderson began to reel off laps at a furious pace and gradually increased his lead over Cooper. At the completion of 150 miles, he was less than a minute ahead of his teammate and his average was 77.51 miles per hour. De Palma had been forced to relinquish third place to O'Donnell, who was 2 minutes abaft the leader.

Anderson stopped for gasoline on his twenty-first lap and Cooper was at the pits for the same purpose on his twenty-second. Each lost 15 seconds, so neither gained an advantage on the other. Anderson was driving slightly faster laps than his teammate, however, and at the end of 201 miles had a lead of 1 minute 42 seconds over the Californian.

In his next six circuits of the course, Anderson continued to gain more ground

and when he had completed 251 miles, he was leading Cooper by 1 minute 58 seconds. The third-place feud between O'Donnell and de Palma was hard fought, the Duesenberg having an advantage of 1 minute on the Mercedes.

With only 49 miles between them and



TWO OF SATURDAY'S ALSO RANS—HENNING'S MERCER AT RIGHT AND CHANDLER'S DUESENBERG IN OVAL

six laps at a furious pace. The Italian gained 45 seconds on his final six circuits and crossed the tape ahead of the Duesenberg, but the difference in starting times gave O'Donnell the coveted position.

FASTEST LAPS OVER 8.38-MILE COURSE IN C. A. C. TROPHY RACE AT ELGIN, AUGUST, 20, 1915

Car and Driver	Lap	Time	M.P.H.
Stutz, Cooper.....	16	6:26	78.206
Stutz, Anderson.....	13	6:26	78.206
Mercedes, De Palma.....	7	6:27	77.955
Delage, Oldfield.....	16	6:36	76.227
Duesenberg, O'Donnell...	15	6:44	74.721
Ogren, Alley.....	11	6:44	74.721
Duesenberg, Henderson..	8	7:01	71.607
Du Chesneau, Brown....	15	8:01	62.754
Cornelian, Justin.....	7	10:31	47.836

FASTEST LAPS OVER 8.38-MILE COURSE IN ELGIN NATIONAL TROPHY RACE

Car and Driver	Lap	Time	M.P.H.
Mercedes, De Palma.....	36	6:15.85	80.496
Duesenberg, O'Donnell...	26	6:18	79.857
Stutz, Anderson.....	17	6:19	79.642
Stutz, Cooper.....	3	6:26	78.206
Duesenberg, Chandler....	15	6:39	75.645
Delage, Oldfield.....	25	6:40	75.461
Stutz, Burt.....	3	6:46	74.346
Duesenberg, Henderson..	8	6:48	73.985
Mercer, Henning.....	2	6:51	73.445
Lozier, Robillard.....	4	8:00	62.887
Du Chesneau, Jones....	1	8:14	61.108

the checkered flag, Anderson and Cooper took no chances and were content to hold their respective positions. Anderson's car was a trifle faster and Cooper had a commanding lead on both O'Donnell and de Palma. The latter two were not so cautious. With third money hanging in a balance both opened up and drove the last

WILL LOZIER RACE AGAIN?

Detroit, Mich., Aug. 20—A visit of Ralph Mulford at the plant of the Lozier Motor Co. this week has led to the report that the Lozier is considering the entry of cars in the speedway and road races next season with Mulford as the captain of the team. Mulford, who won the Vanderbilt cup and the Elgin National trophy with a Lozier, was in conference with the officials of the company with regard to the possibilities of his driving a Lozier in 1916.

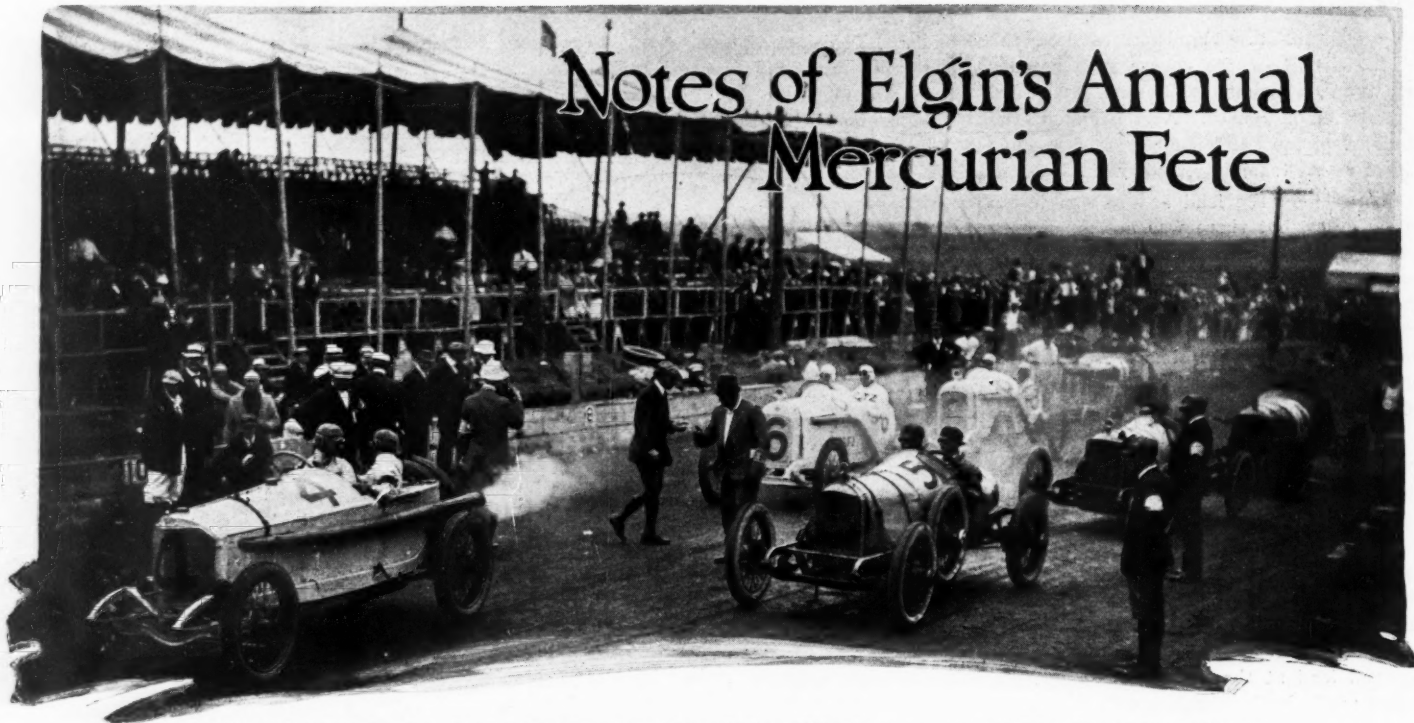
PEUGEOTS SHIPPED TO AMERICA

Paris, Aug. 7—The three Peugeot racing cars that competed in last year's French grand prix have been shipped to America this week to take part in the fall speedway races. No drivers are being sent over to handle these cars, for all the Peugeot men are under military obligations and unable to obtain release. As negotiations have not been entered into with the few Frenchmen who are free and might come to the remaining races of the season, it is to be assumed that the Peugeots will have American drivers.



CONTENDERS FOR THE C. A. C. CUP LINE UP AT TAPE FOR THE PROVERBIAL PHOTOGRAPH BEFORE START OF FRIDAY'S RACE

Notes of Elgin's Annual Mercurian Fete



DE PALMA GETTING UNDER WAY AT START OF SATURDAY'S RACE FOR THE ELGIN NATIONAL TROPHY

FIVE speedways were represented at Elgin, T. E. Meyers of Indianapolis, Phil McShane of Omaha, Sam Orloff of Des Moines, F. H. Wheeler of Minneapolis and David R. Reid of Chicago wearing guests' badges. Frank Engleman of Kalamazoo also witnessed the classics and solicited entries for the 100-mile race to be run in the center of the celery belt August 28.

Johnny Aitken and Howdy Wilcox, who will make their debut as Peugeot drivers on the Twin City speedway a week from Saturday, came up from Indianapolis to cheer their former teammates, Gil Anderson and Earl Cooper, to victory.

Although Bob Burman was not entered, Jack Gable, his mechanic, could not resist the temptation of hearing the motors roar and the exhausts bark and watched the races from the pits.

By its dual victories at Elgin, Stutz practically clinched the title of America's champion road racing car for 1915. It has three wins to its credit, two at Elgin and one at San Diego where Earl Cooper captured the Point Loma event in January. Cooper is tied with Dario Resta for the road racing championship crown. They have scored two firsts apiece, but Cooper has a slight advantage over the Anglo-Italian in that he placed second Saturday.

Barney Oldfield was the pioneer of the field, being the only driver in this year's meet that was a contender for the Elgin National trophy in 1910, the first time it was hung up for competition.

The diminutive Cornelian is not a mechanical camel. Although it completed only nine laps, it stopped six times for water. Neither did it show its

driver, Justen, any gratitude, stripping its universal when only 8.36 miles from a \$100 prize.

Ralph de Palma has little use for money. At least, he withdrew from Friday's race at the completion of 176 miles when he might have driven three more laps and annexed another \$100 for completing two centuries.

A boys' band, featuring the smallest solo cornetist in captivity, furnished music for the Mercurian fete and played "Dixie" when Cooper and Anderson got the checkered flag.

Harry Stutz has decided to enter no more than two cars in any one race. He believes that he can handle two drivers better than three, as he had in the speedway events at Indianapolis and Chicago. The achievements of his cars at Elgin proved the practicality of such a theory.

Although it rained in Chicago up until 10 o'clock Saturday morning, there was no sky leakage at Elgin, but the clouds were threatening until afternoon. The rain kept down the attendance.

De Palma's showing in road races this season has not been up to standard. Out of four starts, he has failed to finish twice but captured fourth place in each of the other events.

Eddie O'Donnell's father saw his first motor car race at Elgin Saturday. Eddie was hired help on the O'Donnell farm near Whitewater, Wis., before he joined the Duesenberg team

as a mechanic in 1912. It was the first year he has driven at Elgin, as he pumped oil for Eddie Rickenbacher last August.

DeLloyd Thompson, the aviator, furnished pre-race thrills both days by looping the loop in his aeroplane and performing other spine-jolting stunts amid the clouds.

Gil Anderson's name will be engraved on the Elgin National trophy for a second time. He first won the cup in 1913.

The appearance of Billy Chandler at the wheel of the Duesenberg Saturday was a surprise. He had a narrow escape from death at Des Moines August 7, when his car turned over, killing his mechanic, but Chandler looks none the worse for the accident.

Barney Oldfield had a regular actor in his pit to assist in making tire changes on the Delage. He is Frank Stone, a comedian and dancer, now playing at a Chicago burlesque theater.

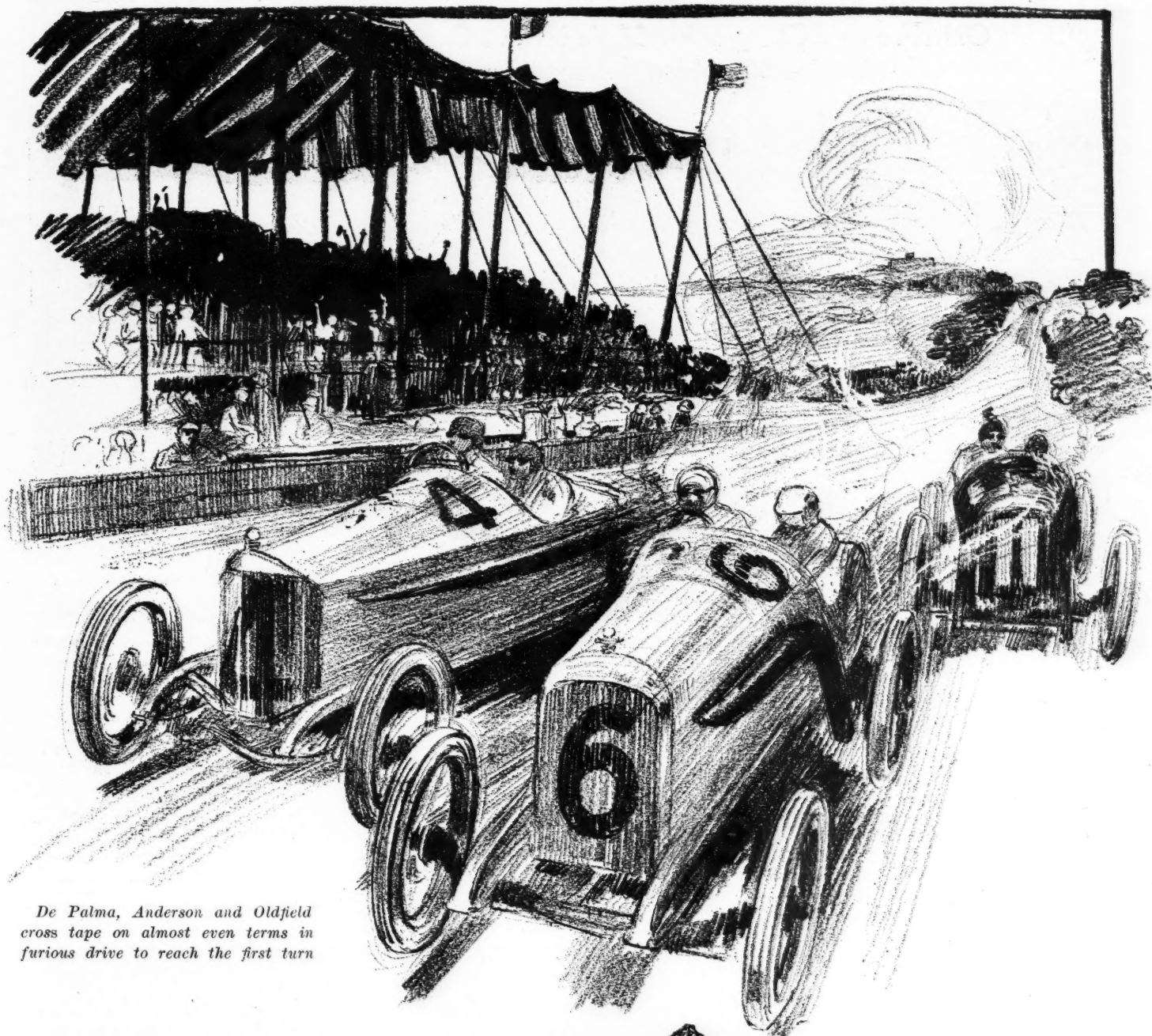
The two-car start, introduced for the first time in this country at Elgin last year, was not used in either race as the fields were not large enough to make imperative the sending away of the machines in pairs. The drivers got the word at 30-second intervals.

The threatening weather kept down the attendance and the promoters lost approximately \$16,000 on the meet. In the face of this deficit, they are planning for the 1916 events. The card for next season probably will consist of one race on Saturday for a purse of at least \$10,000.

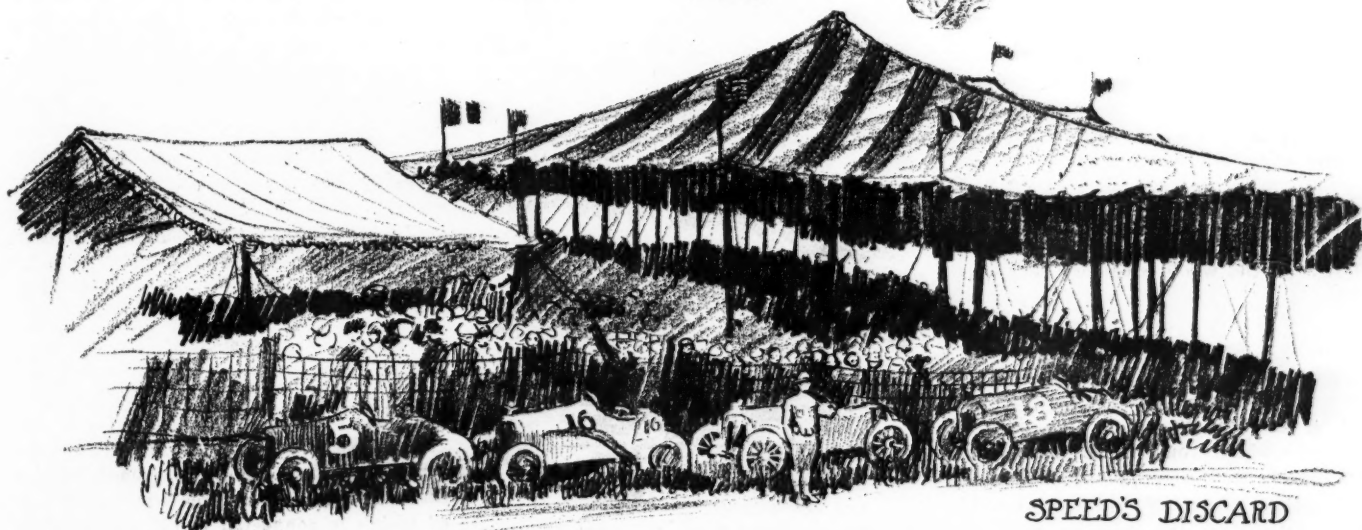


After driving the Du Chesneau Friday, Bill Brown surrendered the wheel of the car to Bud Jones in the Elgin trophy race.

Most Spectacular Spurt of the Elgin Road Race Classic



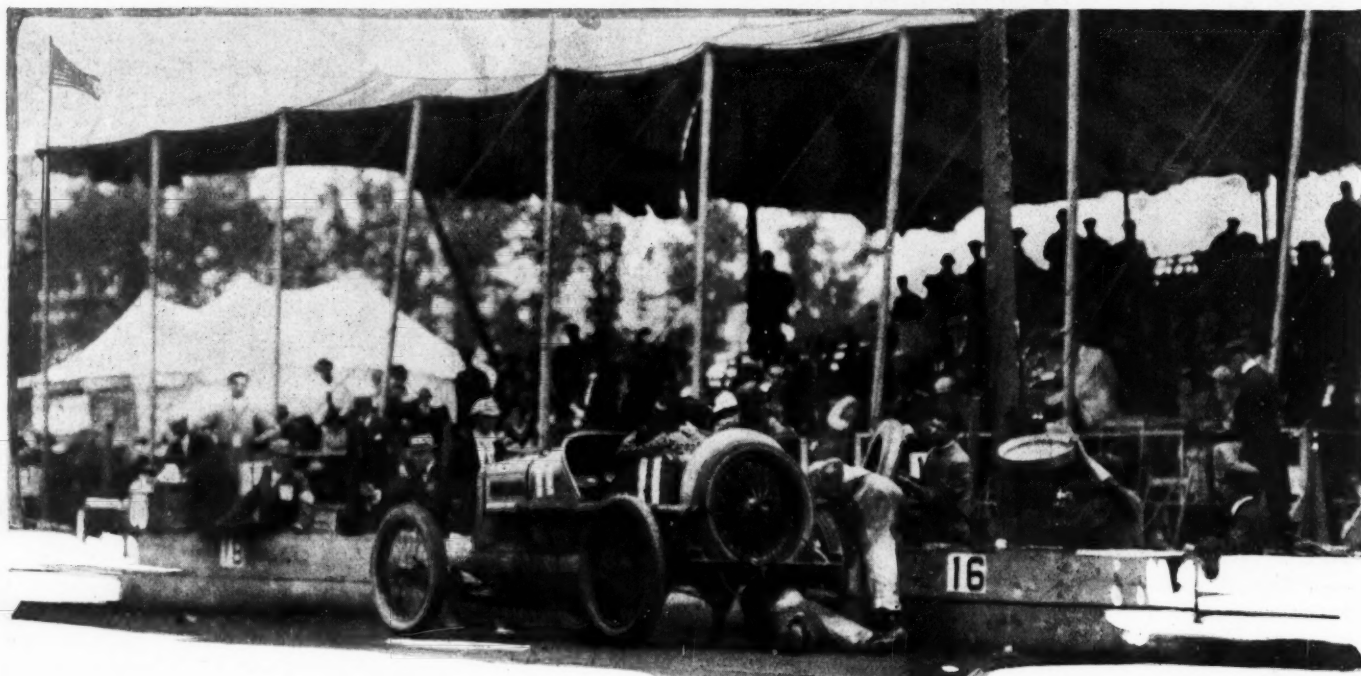
De Palma, Anderson and Oldfield cross tape on almost even terms in furious drive to reach the first turn



SPEED'S DISCARD

Cord Tires in Road Race Debut Set World's Record

Only Fourteen Changes Are Made in Two Contests at Elgin, Anderson
Driving 602 Miles Without Single Stop for Rubber



BARNEY OLDFIELD STOPS AT PIT FOR REAR WHEEL ON FIRST LAP OF C. A. C. CUP RACE

ELGIN, Ill., Aug. 21—Cord tires invaded a new field in the C. A. C. and Elgin National classics today and yesterday when they had their first tryout in actual road racing. Anderson, Cooper, de Palma and Henning carried Silvertown cords and Robillard in the Lozier had a cord tire of Marathon make. Anderson, who finished first in the 450-inch event today and second in the 300-inch race of yesterday, rode on the same tires throughout both races though he had different cars. They looked as good at the end of the 603 miles of the 2-day meet as they did at the beginning.

Cooper went through the 2 days with one tire change, which was caused by a horse-shoe nail picked up Friday. De Palma, likewise, had a puncture which necessitated a tire change, but all of his casings looked good for double the distance; in fact, there is only one mark showing on de Palma's tires and this came from his vigorous braking when he overran the turn today.

Stand Up Better Than Previously

Tires on the whole stood up very much better this year than they have in previous races. This cannot be credited entirely to the tires for the course is so much smoother than it has been previously that less tire wear was to be expected. The day was cool, as has been the case in previous Elgin meets which would be accountable for less heating and consequently longer life of the tires. Another factor is that the cars, particularly the speedier ones, are better balanced each year so that they hold

By Darwin S. Hatch

the road better and thus relieve the tires of added strain.

Friday's race saw only three tire changes, the two of de Palma and Cooper already mentioned and one of Oldfield's, changed at the end of the first lap. The Saturday race was more prolific in tire trouble than was the Friday one. This

was to be expected, inasmuch as many of the tires were used on the second day that had gone through the first day's 301 miles. Also, the average speed was over 2 miles an hour faster on Saturday, a difference that would make quite an appreciable lessening of tire life. Altogether there were eleven tires changed Saturday.

No Front Tires Changed

O'Donnell made a change on the back stretch, Oldfield replaced four, Robillard lost one by a blowout, Chandler lost two, and Hendersen in the Deussenberg lost three. It is worthy of note that not a front tire was changed at the pits during the 2 days' racing.

Elgin was the first road race in which a positively closed valve motor has been used. This is the Delage which Oldfield drove. It is unique in that there is no necessity for valve springs. A cam insures the opening of the valve, also the closing, a feature that makes it similar to the sleeve-valve engine, where the uncovering and covering of the ports is positive.

With this arrangement it is possible to increase the speed of the engine as the valve spring is one of the limiting factors in motor speed in poppet-valve engines. There is a single overhead camshaft with eight pairs of cams and for each valve there is a three-arm rocker, one of which is connected direct to the stem valve and the two others are in contact,



DE PALMA REPLACES BROKEN ROCKER ARM ON MERCEDES FRIDAY

one with the opening and the other with the closing cam.

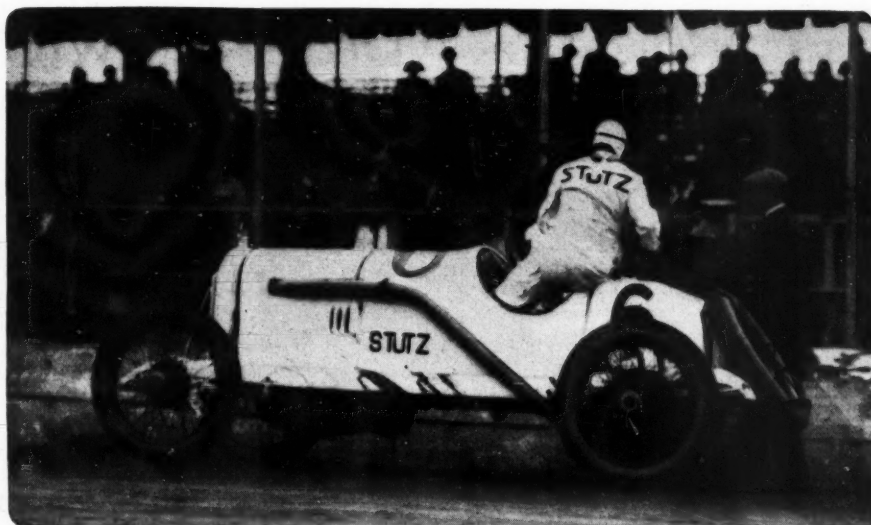
There was an unusually small amount of pit work during this year's Elgin classic, but in a number of cases the troubles which brought the cars into the pits were of such serious nature that they required rather unusual long stops, so that there was a car undergoing repairs of some sort a good portion of the time.

To take up the troubles of the individual cars and drivers in the Chicago Automobile Cup race on Friday, we find that Cooper came into the pits on only two occasions. The first time he halted for 21½ seconds to take on gasoline and tighten up the shock absorbers. The second and last stop was when he changed a right rear tire which was punctured by a horseshoe nail. This held him for 33 seconds so that the Californian's total time lost at the pits was just less than 1 minute.

Anderson Finishes on Three Cylinders

Anderson, his teammate, likewise made but two stops. The first one was at 167 miles when he took on gasoline, getting away in 20 seconds. After he had run over 200 miles he came into the pit missing on one cylinder. After looking at the ignition and valves Anderson started out without doing any work to remedy the trouble and finished on three cylinders in second place.

Eddie O'Donnell, in the Duesenberg,



ANDERSON TAKES ON GASOLINE IN 17 SECONDS IN ONLY STOP HE MADE IN WINNING DRIVE FOR ELGIN TROPHY

made only one stop and this was at the end of 206 miles when he took on fresh supplies of gasoline and water; at the same time, he attached the accelerator spring which had become loose.

Oldfield First at Pits

Oldfield in his Delage had the record of making the first stop of the day, when he changed a right rear tire at the end of the first lap. He made a halt for gasoline and oil after running 217 miles.

De Palma made three stops and lost a total of 1 hour and 15 minutes before he finally retired with a broken rocker arm. The first time he stopped was after he had run about 35 miles and he came in on three cylinders. The rocker was giving him trouble but, after spending 5 minutes and 30 seconds at the pit, he got away without doing anything other than changing two spark plugs. The next lap, however, which took nearly 13 minutes, ended at the pits with the rocker arm broken and

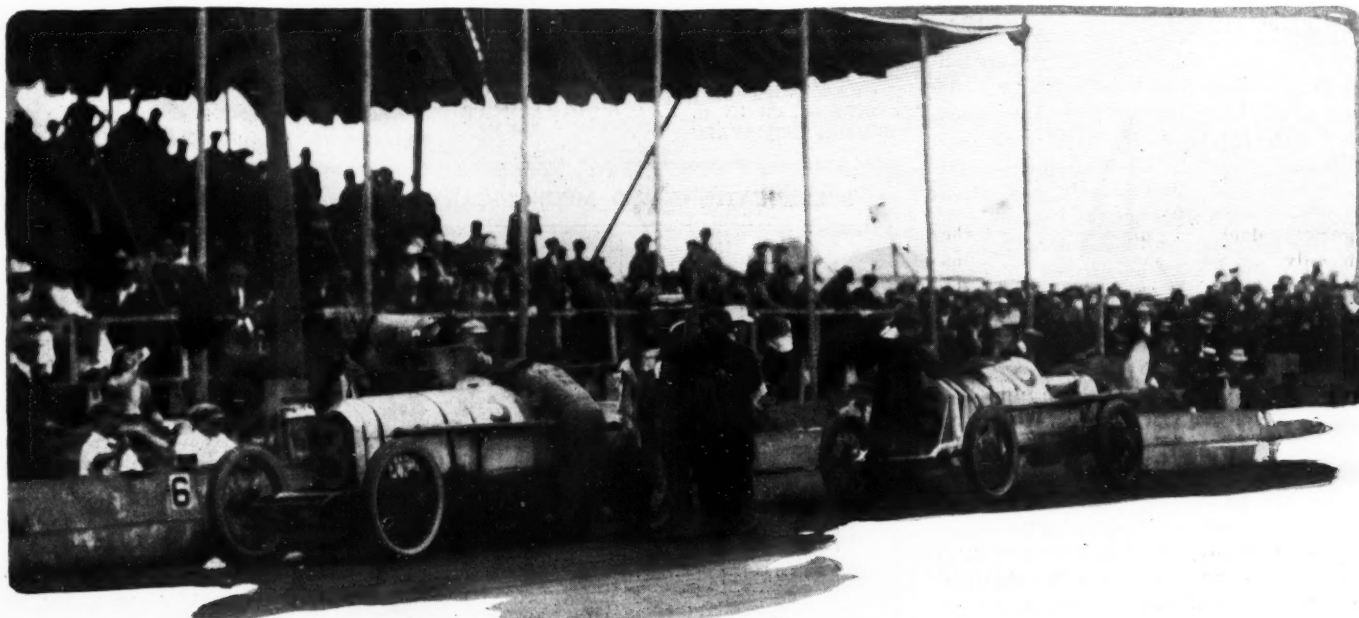
de Palma waited while a mechanic went to his garage in town after another rocker arm. By the time the new one was fitted 1 hour and 9 minutes had elapsed. De Palma, however, started out to finish 100 miles with a view to running in the motor, which had new pistons and also to get some practice for the next day's event. He was out of the race to all intents and purposes when his first trouble developed.

Henderson's

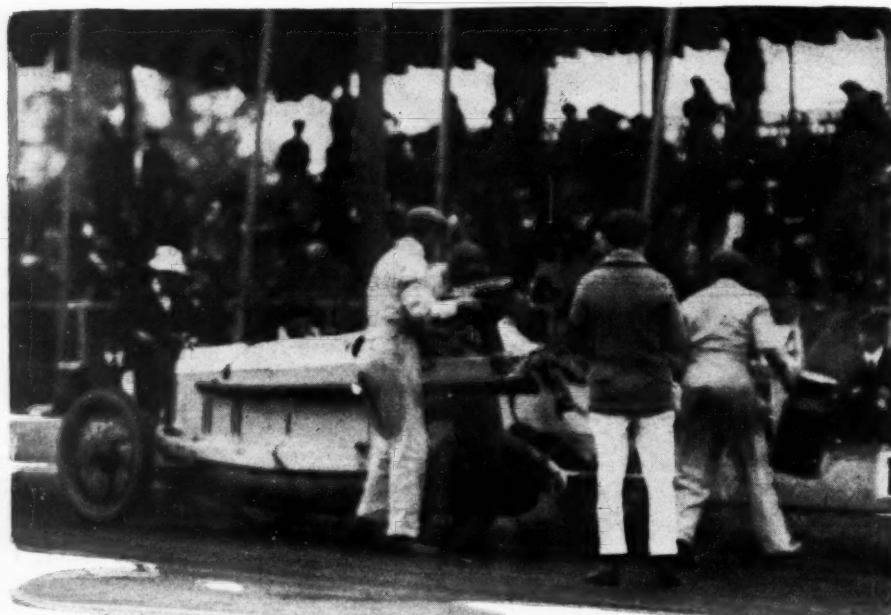
Duesenberg was a contender until he came in with a stuck valve and broken valve spring and went out of the race.

Tom Alley also was running well and made only one stop when he took on supplies and changed a broken spark plug. Alley managed to put the Ogren into fourth place but finished on three cylinders, one cylinder was missing on account of a broken rocker arm.

In Saturday's race, Cooper was shown to be the only one who was free from mechanical troubles among the finishers of the 2-day meet. Cooper went through the 602 miles of the two events without lifting the hood of his car. His only stop on the second day was in the twenty-second lap when he refilled the gasoline tank in preparation for his dash for the checkered flag. He did not spend much time at the pits getting away 13 seconds after his wheels came to a standstill. His teammate, Anderson, also hesitated only once. This



BROWN'S DU CHESNEAU AND BURT'S STUTZ AT THE PITS IN SATURDAY'S RACE



DE PALMA MADE ONE PIT STOP SATURDAY, TAKING FUEL ON TWENTY-THIRD LAP

was a pause of 17 seconds while a gasoline can was upended over his tank.

O'Donnell lost a few seconds more, being held 36 seconds while he took on gasoline and oil in the twenty-fourth lap. De Palma lost 16 seconds in the twenty-third lap while he refilled his gasoline tank.

Oldfield made three stops, changing four tires altogether. The first one was in the fifth lap when he changed the left rear, on the second he changed the right rear and took on gasoline and oil and the last time he put on two Pirelli tires which had studded treads.

Three cars, the Stutzes, driven by Cooper and Anderson, and de Palma's Mercedes, covered the 301 miles in the Elgin trophy race without a tire change. Anderson's Stutz, O'Donnell's Duesenberg and Alley's Ogren made as creditable a showing in Friday's contest.

FIFTEEN TO START AT TWIN CITY

Minneapolis, Minn., Aug. 23—There will be fifteen starters at least in the 500-mile race to be run on the new Twin City speedway that will be dedicated a week from Saturday—Sept. 4. Entries closed Saturday at midnight, but several nominations have been filed with Starter Fred Wagner and the promoters will not know what cars are on his list until he arrives from Chicago later in the week.

There will be five Peugeots in the inaugural event. Two of them have appeared in competition before in this country, being driven by Dario Resta and Bob Burman this season at Indianapolis and Chicago. The other three were imported recently from France. Two of them are owned by the Indianapolis speedway and will be piloted by Howdy Wilcox and Johnny Aitken. Ralph Mulford will be at the wheel of the third car, which was purchased by Luther Brown, a Princeton student and friend of Mulford.

Among the other cars in the field will be Ralph de Palma, who has entered his Mercedes. He will hook up with Dario Resta for the first time since the two met on the Hoosier track in May. Barney Oldfield has nominated his Delage.

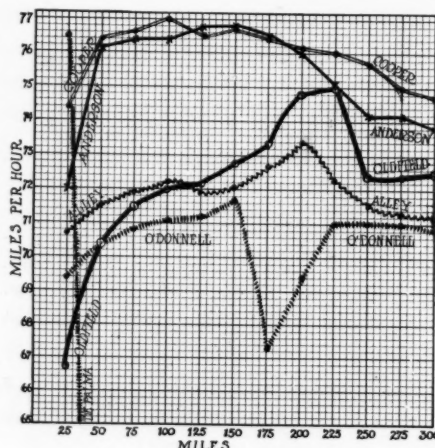


CHART SHOWING AVERAGE SPEED OF CONTENDERS IN C. A. C. CUP RACE AT 25-MILE INTERVALS

The American cars entered to date are the two Stutzes that ran one, two in both races at Elgin, with Earl Cooper and Gil Anderson in the drivers' seats; three Duesenbergs that probably will be handled by Eddie O'Donnell, Pete Henderson and Billy Chandler; W. W. Brown's Du Chesneau, Tom Alley's Ogren and the Sebring. The Sebring, which plunged off the embankment at Des Moines, killing Joe Cooper, will be driven by O. F. Haibe.

The elimination trials will be held Sunday, Monday and Tuesday and all cars must make one circuit of the 2-mile concrete track at a speed of 80 miles an hour or better in order to qualify. As at Chicago, the drivers will be given a percentage of the gate money taken in at practice.

NEW MOTORS FOR DUSENBERGS

Chicago, Aug. 21—When the contenders for the 500-mile race on the Twin City speedway are sent away, there will be two sixteen-valve 300-inch Duesenbergs in the field. Fred Duesenberg now is working on the new motors and will have two ready by the end of next week. The sixteen-valve engines are interchangeable with the present eight-valve jobs, so that the same chassis and transmission system can be used.

The valve arrangement on the new engines is identical with that Duesenberg has used heretofore with the exception that the intake valve is mounted where the port plug now is situated, putting the spark plug on top of the cylinder and carrying the manifold in the rocker-arm cover.

The new motors have a bore of 3.75 inches and a stroke of 6.75 inches, giving a displacement of 298.2 cubic inches. The exhaust valves measure 1 7/8 inches and the intake valves 1 3/4 inches. The motor is ball bearing throughout.

ROBERTSON TO RACE AGAIN

New York, Aug. 20—George Robertson, winner of the Vanderbilt cup race in 1908 and who was injured while practicing for the same event 2 years later, has decided after a 5-year retirement from racing to come back and re-enter the speed game. He has received an offer to drive a foreign car which Walter Allen, a New York

SPECIFICATIONS AND MECHANICAL DETAILS OF CARS IN ELGIN ROAD RACES

Car No.	Car	Driver	CYLINDERS			VALVES		Lubrication	Oil	Grease
			Cast	Bore and Stroke	Pist. Disp.	No.	Arrangement			
2	Cornelian	Justin	Block	2.88x4.00	106.5	8	In head	Splash	Texas	Dixon's
3	Ducheneau	Brown	Singly	3.26x5.50	184.0	16	In head	Force	Mobiloil	.....
4	Mercedes	De Palma	Singly	3.66x6.47	272.1	16	In head	Force	Monogram	.....
5	Duesenberg	Henderson	Block	3.98x6.00	299.0	8	Side of head	Force and splash	Oilzum	Dixon's
6	Stutz	Anderson	Block	3.31x6.00	296.8	16	In head	Force and splash	Oilzum	Dixon's
7	Duesenberg	O'Donnell	Block	*4.37x6.00	360.8	8	Side of head	Force and splash	Oilzum	Dixon's
				*3.98x6.00	299.0					
8	Stutz	Cooper	Block	3.81x6.00	296.8	16	In head	Force and splash	Oilzum	Dixon's
10	Ogren	Alley	Block	3.98x6.00	299.0	8	Side of head	Force and splash	Castorol	Dixon's
11	Delage	Oldfield	Block	3.70x6.30	271.8	16	In head	Force	Oilzum	Dixon's
12	Duesenberg	Chandler	Block	4.37x6.00	360.8	8	Side of head	Force and splash	Castorol	Dixon's
14	Lozier	Robillard	Block	3.25x6.63	220.8	8	Side	Splash	Castorol	Dixon's
15	Anderson	Scott	.....	.....	.....	.....	.....	.....	.....	.....
16	Stutz	Burt	Pairs	5.10x5.50	450.7	8	Sides	Force	Veedol	Dixon's
17	Merced	Henning	Block	3.75x6.75	298.2	8	Side	Force	Castorol	Dixon's

*Used for Saturday's Race. Other in Friday's contest.

motor car dealer, is importing to this country for the Vincent Astor cup race at the new Sheepshead Bay speedway, October 2, and Robertson plans to accept provided the car comes up to expectations.

In his hey-day, Robertson was generally conceded to be America's premier driver. His best remembered victories, in addition to the capturing of the Vanderbilt cup, were the two Fairmount Park road races which he won in 1908 and 1909; 24-hour track races at Brighton Beach, in one of which he broke the world's record in 1910; and the Lowell road race in 1908.

MAY DRIVE FAMOUS SUNBEAM

New York, Aug. 21—Eddie Rickenbacher, winner of the Sioux City and Omaha speedway races, who now is at liberty as a result of the retirement of the Maxwell from the game, has been in New York for several days, being invited here for a conference with Harry S. Harkness, recently elected president of the Sheepshead Bay track.

Harkness is anxious to enter a car in the 350-mile race to be held on the New York speedway October 2 and has opened negotiations for the purchase of the famous twelve-cylinder Sunbeam, holder of the world's 12-hour record.

TRACK MEET AT SPOKANE

Spokane, Wash., Aug. 20—The Spokane interstate fair has set aside 2 days, September 13 and 14, for motor racing on the fair grounds' track. The purses offered are \$1,000 a day to be divided into two classes. One purse each day of \$600 will go to professional drivers, and \$300 each day will go to local drivers and the balance or \$100 each day will go to the winners of feature events. Jim Parsons, in his Parsons Special, and Frank Elliott, in a Gordon Special, will be the headliners of the meet.

SPEEDWAY HEAD RESIGNS

New York, Aug. 20—Carl G. Fisher, head of the Indianapolis speedway, today resigned the presidency of the Sheepshead Bay Speedway Corp., the organization that

is building the New York track which is to be dedicated with a 350-mile race Oct. 2.

In his letter of resignation to the board of directors, Fisher gives the following reasons for his action:

"I am not satisfied with the way the

affairs of the corporation are being handled. I accepted the office with the distinct understanding, among other things, that no contracts were to be entered into that did not receive my personal approval. This, as well as other understandings had with me, have not been carried out.

"Furthermore, I find it difficult as your chief executive to keep in touch with the situation at so great a distance from your base of operations."

Harry S. Harkness, who established a new record with a Mercedes in the Mount Washington hill climb of 1904, has been chosen to succeed Fisher.

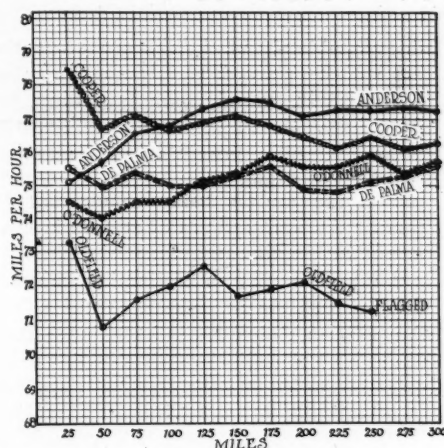
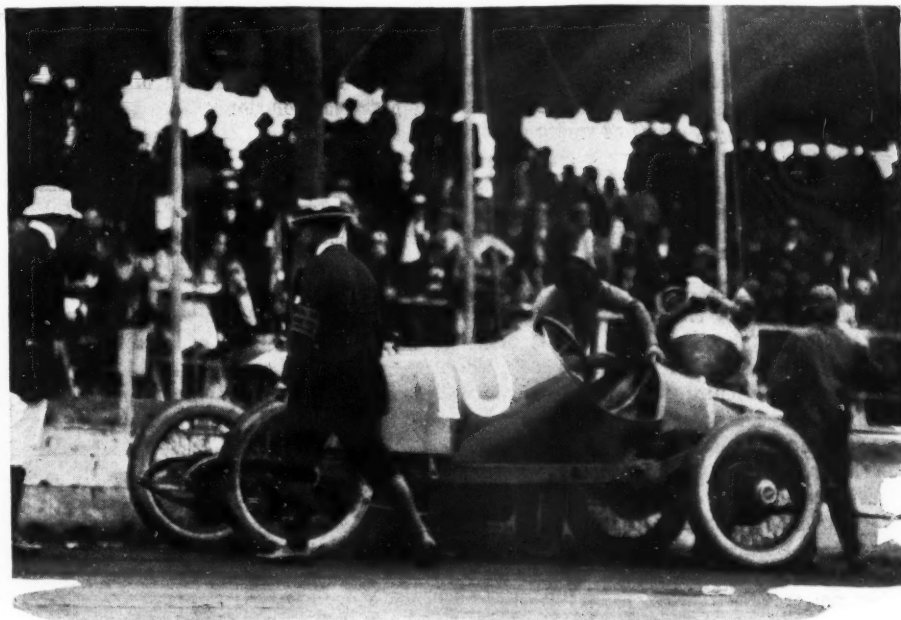


CHART SHOWING AVERAGE SPEED OF CONTENDERS IN ELGIN NATIONAL TROPHY RACE AT 25-MILE INTERVALS

CORONA RACE NOVEMBER 20

Corona, Cal., Aug. 19—At a final mass meeting of the Corona race enthusiasts, it was definitely decided to hold a Corona road race this fall and the date for which a sanction will be asked of the A. A. A. is November 20.

The association which promoted the race last year has been disincorporated. The



TOM ALLEY'S OGREN AT THE PITS IN FRIDAY'S CONTEST

AUGUST 20 AND 21, TOGETHER WITH EQUIPMENT USED BY EACH DRIVER

MAGNETO	SPARK PLUGS	CARBURETER	MAIN BEARINGS		PISTONS		Wh'l Base	Wh'ls	TIRES		Gear Ratio
			No.	Kind	Material	Rings			Make	Size	
Atwater Kent	Bosch	Master	2	Plain	Magnalium	2	100	Own	Goodyear	28x3	3 to 1
Bosch	Rex	Rayfield	5	Plain	Magnalium	2	112	R.W.	Qualityre	33x4 1/2	2.85 to 1
2 Bosch	Eisemann	Packard	5	Plain	Lynite	4	106	R.W.	Silvertown	33x5	2.25 to 1
Bosch	Rajah	Schebler	2	Plain	Magnalium	3 in 1	106	R.W.	Riverside	33x5	2.25 to 1
Bosch	Bosch	Stromberg	3	Ball	Al. Alloy	2 in 1	102	Houk	Silvertown	33x5	2.25 to 1
Bosch	Rajah	*Master	2	Plain	Magnalium	3 in 1	106	R.W.	Riverside	32x4 1/4	2.25 to 1
Bosch	Bosch	Schebler	3	Ball	Al. Alloy	2 in 1	102	Houk	Silvertown	33x5	.....
Bosch	Bosch	Stromberg	3	Ball	Al. Alloy	2 in 1	102	Houk	Silvertown	33x5	.....
Bosch	Bosch	Rayfield	2	Plain	Magnalium	3 in 1	104	Houk	Nassau	34x5	3 to 1
Mea	Rajah	4-Chaudel	5	Ball	Steel	2	106	R.W.	Firestone	35x5	3 to 1
Bosch	Rajah	Schebler	2	Plain	Magnalium	3 in 1	106	R.W.	Riverside	33x5	2 1/4 to 1
*Rajah	.....	Rayfield	3	Plain	Cast Iron	2	106	Wood	Marathon Cord	35x4	.....
Splitdorf	Bosch	Stromberg	3	Plain	Cast Iron	2	101	Houk	Nassau	33x4 1/2	2.82 to 1
Bosch	.....	Rayfield	3	Plain	Steel	2	108	R.W.	Silvertown	33x4 1/2	2.625 to 1

All cars have four cylinders and used Boyce motometer and Hartford shock absorbers.

entire issue of stock for the 1915 race has been subscribed and directors have been appointed to incorporate the new body, which is to be known as the Citrus Belt Racing Association of Corona.

The purse will be from \$12,000 to \$15,000. If the former amount is offered, it is the intention of the race promoters to ship the drivers and cars out from Chicago and allow each driver a certain amount of expense money.

DIRT TRACK FOR WICHITA

Wichita, Kan., Aug. 20—Tim Hurst has signed a lease on site near this city and announces that a 2-mile dirt race course will be built at once. It is said that Barney Oldfield will christen the track at the opening meet in October.

Perlman Rim Patent Is Upheld

Court Decision Holding Standard Welding Infringer of Demountable Design May Affect All Types

NEW YORK, Aug. 21—A court decision has been handed down in the demountable rim patent field which gives promise of being one of the important patent decisions of the year. The case was that of Louis Perlman who in 1913 sued the Standard Welding Co., maker of demountable rims, for infringement of his patent, which it would appear seems to cover pretty thoroughly the demountable rim field. The court issued an injunction restraining the Standard Welding Co. from making or selling rims infringing the Perlman patent and ordered an accounting of the firm's profits resulting from the manufacture of such rims.

The Perlman patent declared infringed was issued June 29, 1906, and is No. 1,052,270, the court deciding that claims 8, 11, 12 and 13 are infringed. This patent covers a demountable rim sustaining an inflated tire ready for application to a wheel. The particular form of rim covered in the patent is one in which the demountable portion is secured by a series of wedges which are inserted between the wheel felloe and the demountable rim, these wedges pressing radially outward against the rim and also entering laterally between the rim and felloe when the bolts retaining them are tightened.

The Standard Welding Co. in its defense contended that in 1906 and 1907 it began to manufacture what was known as the old-style Continental demountable rim, the means of securing it to the rim being practically the same as those described in the Perlman patent. The Standard Welding Co. contended that its rim was an adaptation of one previously produced commercially in Europe, particularly in France where it was known as the Vinet demountable rim or wheel.

Ruling of Court

The court ruled that, "The same result is accomplished in both devices, a demountable rim is supported on a small amount of surface and is capable of ready application and removal, and yet is firmly locked on the fixed rim while in use. While in the case of one there is a bolt with a frusto-conical end which enters a conical cavity in the demountable rim, and in the other a bolt which enters the felloe axially and a wedge plate, in each there is produced this effect. Radial pressure outward from the wheel body, and lateral pressure against the curved flange of the fixed rim is exerted on the demountable rim. The demountable rim of the defendant, like that of the plaintiff, is of rolled sheet metal, comparatively thin, capable of an amount of distortion, yet sufficiently rigid to carry the full load between the points of support. Again, the

demountable rim of the defendant is cylindrical, like plaintiff's, is made so as to have certain spaced inclined surfaces engaged and locked by small wedges like plaintiff's and provided with locking wedges for engaging the rims at spaced points, the wedges being constructed to present the least amount of surface in contact with the rim.

"I can perceive no distinction in function between the two wheels and as a fact the question that presents itself is whether or not such a similarity exists between the patented device and the defendant's wheel to sustain the claim of infringement."

The question of invention in the use of the short-stem lug by Perlman, is covered, the court pointing out that long-stem lugs had been in use for some time previous to his conception of the possibility of the use of the short-stem variety by the use of a detachable handle and comes to the conclusion that, "the device of Perlman was a practical solution of the problem of replacing a deflated tire in a quick and easy way." The court also mentions the early activity of Perlman about 1900 in endeavoring to devise a way of facilitating tire replacement on the road and reviews the steps of his invention, taking out of patent, etc. In regard to the alleged prior art cited by the defendant, the court ruled that either of these were foreign to the matter or not of such a character as to invalidate Perlman's invention.

In reference to the French patent to Vinet, No. 347,651, issued November 4, 1904, the court says, "the plaintiff should not be defeated by reference to the Vinet patent because the evidence convinces the court that the plaintiff has proved his invention as antedating the foreign publication of date March 18, 1905."

The opinion continues, "the evidence satisfies me that in 1903 plaintiff completed, and in 1904, successfully operated his invention."

In reference to the steps taken by Perlman to obtain recognition from the patent office, the opinion says, "Many claims were presented and many cancelled and yet I find no claim of the same scope as the claims of the patent and none, which, being conceded to be non-patentable, can be construed as an estoppel against Perlman's right of protection against infringement by a rim-wheel demountable, embodying locking elements placed to press the demountable rim radially outward and thrust it at right angles to the radial action in the final or operative position and to lock there tensioned during use, but capable of being readily released from tension allowing the rim to assume a loose position before it starts to move off the wheel.

"Finally, Perlman's patent shows invention, completed by him in 1903. Two distinct features mark the invention: 1—The demountable rim combination with its locking means; 2—the short stem lug combination for clamping the tire to the demountable rim. The invention claimed was based upon a provision for a demountable rim which is loose on the wheel when applied, but is locked by locking means which may be unlocked and thereby may restore the loose condition before commencing removal. This same combination has been adopted by defendant and the same combination as disclosed and claimed in the patent in suit has been taken. Plaintiff disclosed to the defendant the patented invention before defendant began to manufacture demountable rims.

DETROIT BODY CREDITORS MEET

Detroit, Mich., Aug. 21—Creditors of the bankrupt Detroit Body Co. will meet on August 27 to take action on the petition of the Security Trust Co., trustee to consider certain offers of settlement made by two concerns which are creditors of the Detroit Body Co. One of these, Richard, Halstead & Quick, has instituted an attachment suit on the property of the bankrupt, but it agrees to take 50 per cent and discontinue this attachment suit. The other, the F. B. Ensley Co., for which the Union Trust Co. is acting as receiver, has agreed to take 60 per cent of its claim and release the money it has garnished. The Security Trust Co. recommends that the former offer be rejected and that the latter be accepted.

ABBOTT CREDITORS PAID

Detroit, Mich., Aug. 21—Creditors of the Abbott Motor Car Co. have just received a dividend of 34 per cent on their claims from the Security Trust Co., trustee. This makes a total of 90 per cent that has been paid back to the creditors, and within a short time another 10 per cent is to be distributed, making 100 per cent settlement.

This happy state of affairs was brought about by the Abbott company giving a mortgage in favor of its creditors. Then the Consolidated Car Co. succeeded the Abbott company and assumed this mortgage, agreeing to pay the trustee 40 per cent of its gross receipts monthly. By this method the mortgage is practically wiped out, and the Consolidated concern is said to be operating on a firm financial basis.

DRIGGS-SEABURY ISSUES BONDS

New York, Aug. 21—In addition to the \$500,000 non-cumulative 7 per cent first preferred, \$500,000 non-cumulative 7 per cent second preferred and \$3,000,000 common stock, the Driggs-Seabury Ordinance Co. has authorized an issue of \$1,500,000 first mortgage 6 per cent serial bonds. These bonds mature serially, \$300,000 each year, starting August 1, 1916, and are callable at 101 and interest.

Two series, 1916 and 1917, amounting to

Military Motor Cars a Feature of Training in Civilian Army Camp at Plattsburg, N. Y.



Above, some of the cars used in the military training camp
At right, motorized artillery supply train

Below, Red Cross and supply trucks on the road



\$600,000 have been sold at par. The remainder, \$900,000, are being offered for subscription at 97 with a 10 per cent bonus in common stock.

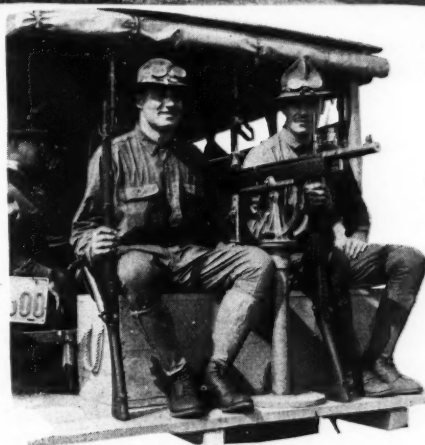
The second preferred stock is convertible at par into common stock at any time, it is stated.

KING HAS MILITARY OUTING

Detroit, Mich., Aug. 23—The King Motor Car Co. entertained their parts manufacturers, King distributors and other guests to the number of 150 at a very novel outing at New Baltimore, Mich., August 21 and 22.

The King officials had arranged a large camp at New Baltimore with a big mess tent, canteen, band quarters, guard house and a dozen big sleeping tents to care for the guests.

Officials of the King company were given



Machine gun mounted on tailboard of supply truck at the Plattsburg maneuvers

regular military positions. Each man had duties assigned to him and the program

was run off with the same regularity and prevision that characterizes a military encampment.

MORE CARS FOR U. S. ARMY

Washington, D. C., Aug. 21—War department officials have been informed that Maj. Gen. Frederick Funston, commanding the southern department, with headquarters at Fort Sam Houston, Tex., has a plan for using motor cars extensively in the transportation of troops and supplies in Texas.

Funston has recommended the purchase of four machines for use in rapid transportation between points where it is necessary to maintain controls. Success of the motor cars employed in the civilian military training encampment at Plattsburg, N. Y., bears out his recommendations for more cars.



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What is Racing Interest?

ARE motor car racing enthusiasts too hard to satisfy? Our fans have asked for speedways where they can see twenty-five starters race round and round the track for 200 or 250 laps but cannot analyze the race so rapidly are the cars circling the track. It is a constant current of cars passing at upwards of 100 miles per hour. It should be the last word in excitement but is such excitement the most enduring form of interest in motor car racing?

YACHT racing is as popular as it was years ago but it is not necessary to have a yacht passing your eye every second, yet it is essential that interest follow the race as closely as possible. In motor boat racing it is not necessary to have twenty-five boats lined up side by side, or to have them running in a 2-mile circle around some small island which is covered with a grand stand for the spectators.

ROAD racing for motor cars does not occupy the popular ear today as it did several years ago. This is due to the speedway movement, which, while it did not start as a financial enterprise, must be classed in that category today. Road racing has the same charms today it had years ago and there are thousands who enjoy the good race as much today as they did 10 years ago. It is not necessary always to see a racing car or always to see a dozen or two dozen cars from start to finish of the race. The road race brings another mental factor into the situation, namely that of mental stimulus when the cars are out of the sight of the spectators. The mind starts wondering what has happened, wondering if a certain car has passed some other one, in fact, antici-

pating what changes will take place when the cars next appear is a strong factor of interest in road racing.

RACING drivers like road racing because of the variety it offers. The monotony of the saucer track is gone. There is something new in control of the car every minute of the race. It is, in short, a good test of driver ability and an excellent test of car stamina. True the test on the motor is not so severe as in a speedway race, yet the test of a road race on the entire car is a considerable one. The springs, axles, frame and steering parts as well as brakes and gearset are tested as they cannot be in a speedway race.

THE usefulness of road races has not yet ceased; the interest in road racing is as great as formerly, but unfortunately road racing has suffered because of the money-made craze for speedways, where heavy charges for admission and tremendous prizes can be had. It will be a matter of regret if more attention is not given to road racing and if a few of the road race classics are not maintained in face of the fabulous speedway purses and the higher speeds possible. The road race should remain as classical as the great yacht races, the great golf, tennis, and other sporting contests in which the mad passion for an unceasing spectacle extending over several hours is demanded. The spectacle is desired in short events but becomes monotonous in long-drawn-out struggle and in which it is the mathematics of the race that breed the interest rather than the spectacle.

A Manufacturers' Error

IT is poor policy to announce your 1916 cars early in June or July and then not be able to make deliveries until September 1 or later; and it is still poor policy to make these 1916 announcements early in July or late in June before all of the dealers have sold out on the 1915 models. Several makers have congratulated themselves on what a hit their 1916 models have made and how they have got them announced well ahead of their competitors. They have made themselves pleased at the big orders taken for 1916 models, but they have not said very much about cancellations every day because deliveries cannot be made. It is an ill wind that blows nobody good and naturally several companies have profited handsomely by the cancellations of other companies.

THE most serious aspect of this June and July announcement policy is that it upsets many thousands of dealers in the months that they should be doing the biggest business. June and July should be big selling and delivery months. They are the months when warm weather, good roads, seaside resorts, holiday trips, river picnics and a hundred other recreation voices are calling in their loudest tones. They are the very months when dealers should be right on the job selling and making deliveries. They are the months when nothing should be done to retard selling. They are the months when not a jarring ele-

ment should enter into the merchandising atmosphere. But what has been the result during the last 2 or 3 months? Announcements every few days of prices cut from \$50 to \$300 entirely upset the buying clientele. Many gave up the idea of buying and sat back waiting until all of the 1916 announcements with lower prices were made, hoping perhaps to save a few hundred dollars and get better cars. This is poor policy. It may have been good for some factories but it has been very bad on a great many dealers. Some of the best dealers in the country have raised their voices in protest, but without avail. They are not yet through. Their voices will be heard more loudly before another June or July has passed around. The sentiment is growing very rapidly that makers must give dealers better protection.

WHAT better reason could be offered for better organizations among dealers. Our local associations are doing good work, but we want state association of dealers and then we want the national association of dealers. Action has been taken by at least one organization to have the National Automobile Chamber of Commerce take up with the manufacturers the inadvisability of making early announcements which it is averred kills the interest heretofore displayed at show time, since models exhibited in early winter have been shown in some cases 6 to 8 months previously.

Motor Industry of Norway Feels Scarcity of Tires

Supply Exhausted and Inability to Replenish Has Serious Economic Bearing on Norse Domain—Warring Countries Take Output

CHRISTIANIA, NORWAY, Aug. 10—Norwegian owners of motor cars are hard hit by the announcement of dealers that the supply of tires in that country has been exhausted and that it is impossible to replenish the stock to any extent because belligerent countries are taking up all of the world's supply. At present, it is said, there is not a new tire to be bought at any price anywhere in Norway.

Not only is this situation annoying, but it will have a serious economic effect on Norwegian farming. It is doubtful if any country has adopted the motor car more extensively in a public way, for in the Norse domain the sparsely settled hills never have been able to support railways, hence the motor car has become the principal means of communication and transportation, both for the farmer and the commercial man. Nearly all of the many cars that have been put into service in recent years are of foreign manufacture,

for there are no motor car factories in Norway. The same is true as to oil, gasoline and tires—Norway looks to outside countries for its supply.

The importation of tires steadily has decreased since the European war began and the present impossibility to obtain new tires has forced many taxicabs in Christiania to go out of business. Cars on the public motor car routes in the country are wearing their tires down to the last thread and it appears that their service soon may have to be discontinued.

The Royal Automobile Club, of which King Haakon is honorary president, now is negotiating with foreign governments in an effort to get permission to import tires, with a guaranty on the part of Norway that the tires will not be exported to any of the belligerent nations. Trade between the Scandinavian countries and the outside world has been reduced nearly to nothing since the German and English

blockades were established, which accounts for the inability of tire manufacturers to get their product into the hands of Norwegian dealers.

CAN'T FILL TIRE ORDERS

New York, Aug. 24—The Kelly-Springfield Tire Co. is now 27,000 tires behind orders. As the company manufactures between 1,000 and 1,100 tires a day, this means that it is approximately a month behind orders on its books. The Akron plant continues to operate at capacity and officials say that business on hand and in sight ensures a continuance of this rate of operation throughout the remainder of the year.

The company recently entered the truck tire field. By the first of the year it is estimated that it will be possible to make 400 truck tires a day. Enlargement of the plant in order to make this a possibility is now under way.

See America First — See America Now

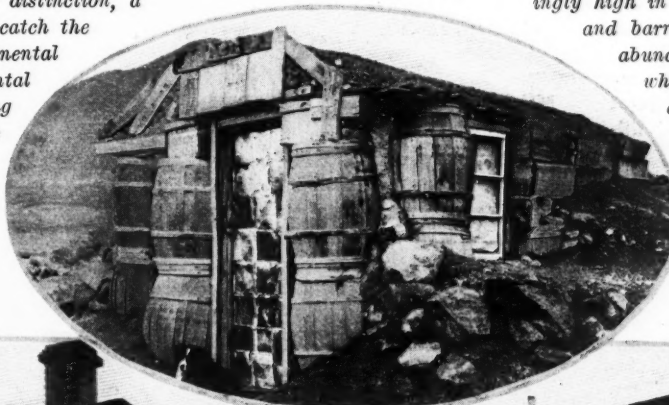
EDITOR'S NOTE—This is the fortieth of a series of illustrations and thumb-nail sketches of scenic and historic wonders of America to be published in Motor Age for the purpose of calling attention of motorists to the picturesque points of interest in their own country.

NO. 40—TOP—BARREL HOUSE. LEFT—CAN HOUSE. RIGHT—BOTTLE HOUSE

TONOPAH, NEV., has been in the limelight on several occasions in years past, gaining notoriety from a variety of subjects ranging from championship prize fights to mining booms, but aside from these claims for distinction, a number of relics of pioneer days catch the eye of tourists on their transcontinental treks and leave in their minds mental pictures that remain with them long after. Not the least among these points of interest are the mining prospectors' old cabins, three of which are shown herewith—the barrel, can and bottle houses of Tonopah. While there is no particular history connected with

these buildings, they show that the early residents of Tonopah were resourceful enough to overcome a dearth of building material. In the pioneer days lumber was very scarce and prices exceedingly high in that city. Bottles, kerosene cans and barrels were more plentiful, clay was abundant and straw obtainable with which, when mixed with clay mortar, a substitute for lumber was made.

As the town grew and more modern methods of building came into vogue, the old structures became landmarks and often were referred to in giving directions in that locality, and they are memorials of pioneer days.



Merry Gasoline War on in St. Louis

Independents Raise Price of Fuel in Answer to Standard's Cut—Situation in Other Cities

ST. LOUIS, Mo., Aug. 21—After following the lead of the Standard Oil Co. nine times in the last 18 months by cutting the price of gasoline 1 cent each time, independents here balked—they raised the price 1.1 cent this week.

The Pierce Oil Corp., which the independents had termed an ally of the Standard Oil, in an alleged sham battle to freeze out the small dealer, announced increases in its gasoline prices soon after the smaller independents. The Standard, however, 3 days after the independents' cut, had not yet brought down its prices.

The price of No. 1 gasoline was raised from 12.4 cents to 13.5 cents per gallon; No. 2 from 10.9 to 12 cents per gallon; No. 3 from 8.9 to 10 cents per gallon. These prices are for 10-gallon lots.

The independent dealers say they expect the Standard Oil to follow their lead, and that they will continue to increase the price of gasoline until it is the same as before the so-called war, that is, from 15 to 17.5 cents per gallon according to grade.

The independents denied that prices had been raised by agreement, although stories have been printed here of a recent secret meeting in Kansas at which it was said the increase was decided upon. There has been some talk of an investigation by state officials into these charges. Attorney General Barker announces that no request for an investigation has been received at his office and that until such a request is made his office for the present will not undertake an investigation.

GASOLINE UP IN MILWAUKEE

Milwaukee, Wis., Aug. 20—An advance of .001 of a cent in the price of low-test gasoline to dealers and consumers at filling stations is announced by Milwaukee oil companies. Gasoline has been declining fractionally for several months and it is now believed that the tide has turned and consumers are in line for a gradual advance. So-called 60 test gas, ranging from 59 to 62 specific gravity, is now quoted at 10.6 cents; 65 at 13.5 cents; 70 at 15.5 cents and 72 at 17.5 cents.

GASOLINE ADVANCE IN THE EAST

New York, Aug. 23—Within the past week there has been a general advance of 1 cent a gallon in gasoline prices throughout New York state, New Jersey, New England, eastern Pennsylvania and Delaware. The big companies are now selling gasoline wholesale in New York at 14 cents a gallon, compared with 11 cents in the early summer.

The Standard Oil companies affected by these changes are: Standard Oil of New

York, Standard Oil of New Jersey, and Atlantic Refining Co., the Texas Co. and Gulf Refining Co. are quoting prices similar to the Standard.

MUST DISPLAY GRAVITY OF FUEL

Savannah, Ga., Aug. 21—Notice has been served on the retail dealers of the state that they must comply with the law regulating their business within a limited period, or indictments will be brought against them. The particular provision of the law to which inspector Bryant calls attention is that requiring the dealer to state and display by label, sign and otherwise, the specific gravity of any and all gasoline offered for sale. It does not prohibit the sale of low-grade gasoline, but it does enable a purchaser to know what he is getting, so that he cannot be charged a high-grade price for a low-grade product.

COLORADO TOUR STARTS TUESDAY

Denver, Colo., Aug. 20—The 860-mile reliability and economy tour, scheduled to start from Denver through the mountains September 6, has been postponed to start a day later. The tour will cover 6 days, with noon and night controls at Hot Sulphur Springs, Steamboat Springs, Meeker, Glenwood Springs, Grand Junction, Montrose, Gunnison, Salida, Canon City, Pueblo and Colorado Springs. The official sanction of the American Automobile Association has been secured, and the contest will be conducted according to the regular A. A. A. rules, with necessary modifications to admit a wider range of cars than would come under the strictly stock-car requirements.

MILWAUKEE SHOW-TOUR STARTS

Milwaukee, Wis., Aug. 23—A traveling motor car show probably is the fittest name that can be applied to the 5-day sociability and business tour of the Milwaukee Automobile Dealers, Inc., which started from Milwaukee this morning. Twenty-five cars, including pilot, pace-maker and relief cars, were checked out and at least ten more are starting today and tomorrow to join the tourist along the route. The association is staging a traveling motor show that will play half-hour stands in thirty-two of the richest cities in Wisconsin. The tour will last five days; the schedule is fast and averages about 22 miles per hour. It allows a maximum of ½ hour at important points for inspection of cars by townspeople, but at luncheon stops and night controls more time is given for this purpose. There is no competitive features and the tour is for show purposes only.

The tour is 608 miles in length and in-

cludes Racine, Beloit, Janesville, Waukesha, Madison, Fond du Lac, Oshkosh, Green Bay and Sheboygan.

Cars on the tour are: Haynes, Franklin, Regal, Chandler, Overland, Willys-Knight, Hudson, Studebaker, Cadillac, Buick, Jeffery, Mitchell, Winton, Chalmers, Chevrolet, Oldsmobile, Ford, Kissel, Dodge, Paige, Saxon, Stearns-Knight, Pullman, Briscoe, Argo and Hollier.

In addition, there are four cars representing accessories, including the Adee shock absorber, Rayfield carbureter, Johns-Manville products and the Auto Supply Co.

BALL GAME STARTS MOTOR SHOW

Boston, Mass., Aug. 20—Last Wednesday the new ball park of the Boston National team was opened and 46,000 people attended the game while 6,000 more were turned away. It is nearly opposite some of the motor agencies. There was such a big swarm of people and motor cars all around for some hours that Harry Fosdick, of the Wentworth-Fosdick Company, that has just taken on the Dort, decided to have a motor show. He ran the new car out in front of his salesrooms on a grass plot on the sidewalk, and put a sign on it giving the name and price. In a short time scores of people were examining the car and inquiring about it.

Other dealers saw the idea and in a short time there were a number of cars out on display, including White, Kissel, Kar and Briscoe. For a couple of hours hundreds of people went along from one car to another and it was like a busy day at the annual shows on a small scale.

DEAF MUTE CANNOT DRIVE IN N. J.

Trenton, N. J., Aug. 20—A precedent has been established by the New Jersey Department of Motor Vehicles, which has revoked the driver's license of C. H. Over, Jr., of Asbury Park, a deaf mute. The ruling states that a deaf mute is not competent to operate a car. The use of special mirrors mounted on each side of the windshield of his car, so that he could see cars approaching from the rear on either side, was not sufficient for a license.

MOTOR TRACK FOR IDAHO

Alan, Ida., Aug. 20—A. N. Chamberlain, I. L. Hildebrandt and George Cosgrove, for several years connected with horse race bookmaking in Spokane, have gained control of a racing plant here. They have announced plans for banking the turns and constructing this into a motor speedway.

OKLAHOMA AFTER TAX DODGERS

Oklahoma City, Okla., Aug. 23—Motor car owners of Oklahoma who have failed to get a new 1915 license tag, were warned by State Highway Commissioner George Noble to pay the tax on or before September 1. If they fail, they will be subject to a fine not to exceed \$25.

There are 500 or 600 cars in Oklahoma

City that have not been registered. Not more than half of the cars in Oklahoma have been registered with the highway department. On the records there are accounted for a few more than 13,000 up to this date, while it is estimated that there are from 22,500 to 25,000 cars in the state. No mention is made in the new road-motor car tax law as to the taxing of electrics and until the attorney general hands down the opinion, the office will not attempt to collect a tax from these cars.

DISCUSS HEADLIGHT GLARE AT HUB

Boston, Mass., Aug. 24—At a meeting of the advisory committee selected to aid the Massachusetts Highway Commission in framing some legislation to govern motor headlights the committee today busied itself with a draft of a report its secretary wrote out following the last meeting a week ago. It was voted not to recommend any particular device to the highway commission, but to make a general recommendation that would allow the use of devices of various kinds so that the owner of a car need not go to a lot of expense to equip his machine, and visiting motorists would not be held up relentlessly. Members of the committee told of experiments they made with ground glass, pieces of tissue paper, and paint on bulbs and lenses showing that it would be possible to alter the rays and still give light to see the road.

One of the main points discussed was the lighting of the sides of the road, and it was voted to embody this feature in the report. Another matter discussed was the use of the searchlights which may be operated to swing up, down and all around. It was voted that the regulation should cover their use to prevent their being operated promiscuously other than to find the road at night.

MOTOR COMPLAINT BUREAU

Minneapolis, Minn., Aug. 20—A large reduction in the number of motor car accidents has resulted since the Minneapolis Civic & Commerce Association opened its complaint bureau 2 weeks ago following nine deaths and more than 100 accidents in a single month. The postmaster has changed all collection boxes to the right side of the street for motor trucks that gather the mail.

W. S. Milnor, secretary of the state motor car examining board, has asked the committee for suggestion as to the main essentials applicants should master. This followed the failure of 100 prospective jitney drivers to pass the state examination. Complaints are being tabulated as a basis for this examination.

Drivers will have to have photographs affixed to their licenses. Citizens have been made special officers for the arrest of offenders against the motor laws, in addition to the thirty members of the Automobile club secretly serving in the same capacity.

Coffin and Riker Named by S. A. E. Engineers Elected as Representatives of Society on Naval Advisory Board

NEW YORK, Aug. 21—Howard E. Coffin, vice-president Hudson Motor Car Co., and Andrew L. Riker, electrical and mechanical engineer, past presidents of the Society of Automobile Engineers, have been selected to serve on the civilian advisory board which will be organized by the United States Navy Department next month. The designation of these engineers to assist in the very laudable patriotic movement instituted by Secretary Daniels will give general satisfaction, as they received a clear majority of the ballots cast by the voting members of the motor car engineering organization, pursuant to several nominations made by its council. Both Mr. Riker and Mr. Coffin have been intimately connected with this branch of engineering since its commercial inception in this country. They have also had executive experience with the producing companies with which they have been connected for many years.

Mr. Riker was the first president of the Society of Automobile Engineers, serving in this capacity for three terms. Mr. Coffin became the president of the S. A. E. in 1910 and was the prime originator of the movement which has resulted in its great increase in size and activity since that time, the standardization of component materials and parts of motor cars being very prominent in this connection.

TWO MILLION CARS IN U. S. A.

Chicago, Aug. 24—Trade in motor car supplies has reached an enormous magnitude. June 1, of this year, the number of motor cars in this country reached 2,000,000. It is estimated, that 1,000,000,000 gallons of gasoline, worth \$130,000,000 are required to run these cars each year; together with 20,000,000 gallons of lubricating oil, worth \$8,000,000; 12,000,000 tires, worth not less than \$192,000,000; accessories and extra comforts, worth \$100,000,000. Thus the total running expense of all cars in use is \$530,000,000. To this may be added the value of the 600,000 new cars bought during the year, at an average price of \$750 each, which brings the total up to \$1,180,000,000, spent in 1915 for motoring.

SYNDICATE TO STORE CARS

Boston, Mass., Aug. 23—Plans are under way to form a syndicate in Boston that will finance motor car dealers and store their cars pending the delivery of them to purchasers. W. J. McDonald, who is a big real estate operator, is forming the syndicate, and the first move was to purchase property in Boston containing 275,000 square feet. The plans call for the construction of an immense building with some 200,000 square feet of floor space,

and which will be capable of accommodating 1,000 cars. It will be one story, with plans for additional stories if needed.

Spur tracks and loading platforms will be put in so that cars may be run right in from the freight trains and stored there. On their receipt, the agents will be notified and then they may borrow money on the cars to finance their dealers instead of going to banks. The warehouse will be fire-proof and thoroughly modern. The syndicate will have a capitalization of \$500,000.

At present, some of the dealers are paying high rent for storage in buildings far removed from their plants, and this method will allow some of them to get along with less space in their regular headquarters, the space thus vacant being available for salesrooms or service departments.

STUDEBAKER SERVICE FOR DOCTORS

Detroit, Aug. 23—Recognizing the seriousness of having the car laid up, Detroit doctors who run Studebaker cars are to be insured against any trouble with their car by the Studebaker branch here. In the event any member of the medical profession who drives a Studebaker meets with an accident or has his car disabled or out of commission, the new service policy that has been inaugurated provides that anywhere within a radius of 25 miles of Detroit, it will be necessary only for the doctor to notify the service station, when his car will be taken there for attention, and during the time it is there, the doctor will be given the use of another.

FORMS TRUCK CLEARING HOUSE

New York, Aug. 20—Emerson Brooks, formerly vice-president of J. M. Quinby & Co., Newark, N. J., and more recently interested in the motor truck field, has evolved a plan by which he will act as a sort of clearing house for companies which have no metropolitan agents. In addition to the regular representation of one truck company. By such arrangement, he makes it possible for out of town concerns to arrange deliveries through his office, and also to have their catalogs and literature on file there.

POPE PAYMENT POSTPONED

Hartford, Conn., Aug. 2—An extension until September 16 for the payment of \$700,000 by purchasers of the Pope Mfg. Co. plant in Westfield, Mass., has been granted by the United States court. The property was sold July 20 to Wilbur C. Walker, of the Hartford Motor Car Co., Hartford, Conn., Dodge distributors, and Scott McLanahan, of New York, and \$700,000 of the price was to have been paid this

week. Reorganization proceedings are now being carried on. It is stated that the name of the company will be changed to the Westfield Mfg. Co.

STUDEBAKER EARNS \$6,300,000

New York, Aug. 21—Studebaker earnings for the first 6 months of this year are being estimated in trade circles here and in Chicago at nearly \$6,300,000. The second half should be better, because the plant improvements are largely completed. The corporation requires approximately \$900,000 for its preferred dividends. Net earnings, therefore, of \$6,300,000 for 6 months would leave \$5,400,000 for \$27,000,000 common stock. This is equal to 20 per cent for the 6 months, or at the rate of 40 per cent for the full year.

COLE HAS NEW INCLOSED CAR

Indianapolis, Ind., Aug. 23—The Cole Motor Car Co. is featuring in its line of inclosed models, a new berline-limousine mounted on the eight-cylinder chassis. It is an eight-passenger car listing at \$3,250 and is equipped with all the little necessities that inclosed models call for. The compartment in the rear seats six passengers, three of which use the rear seat and the other three, disappearing auxiliary chairs. In front there is room for the driver and another passenger.

In addition to this model the Cole company announces that hereafter it will market a detachable sedan top for installation on its eight-cylinder model. The convertible car lists at \$2,285.

DRAWBACK FOR TWO MAKERS

Washington, D. C., Aug. 21—The regulations of the treasury department of February 25, 1915, providing for the payment of drawback on motor cars, trucks and parts manufactured by the Peerless Motor Car Co., Cleveland, O., have been extended to cover motor cars and trucks manufactured by the Locomobile Co. of America, Bridgeport, Conn.

MORELAND TRUCK TO EXPAND

Los Angeles, Cal., Aug. 20—The capacity of the Moreland motor truck factory is to be more than doubled is the announcement. This will mean that more than 100 motor trucks of this make are to be manufactured per month. This company is also prepared to spend \$1,500,000 each year in bringing the Los Angeles plant up to its full capacity. Several hundred employees will be added.

EMPLOYEES' WAGES RAISED

South Bethlehem, Pa., Aug. 20—The International Motor Co., Allentown, and the Saurer Co., Plainfield, N. J., have placed their works on a 8-hour basis, and in order to compensate the men for the hour they lose, they will pay them 20 per cent additional as a war bonus, beginning immediately.

Missouri Roads Day

Second Annual Highway Improvement Date a Success

Kansas Joins Sister State in Removing Effects of Bad Weather

KANSAS CITY, Mo., Aug. 20—The remarkable increase in the use of motor cars in Kansas and Missouri is accompanied by an even more marked gain in attention to roads. Business men, farmers and citizens, who own or who expect to own motor cars, or who expect to profit by the improved transportation facilities of motor car service, have caught the fever of highway development. Last year Missouri and Kansas had road days, when eager efforts were made to show interest in road repairs. This year, these days have been carefully prepared for, and have actually resulted in marvelous betterment of road conditions.

There was no haphazard and hilarious participation in a road frolic in Kansas this year. Governor Capper had proclaimed August 18 and 19 road days, when actual work was to be done, and city and farm folk got down to business. Commercial clubs, motor clubs and other organizations—the one which happened to have the live ones in them—consulted with the highway engineers and the county and township supervisors; they decided on the pieces of road that needed immediate attention, and they got practical advice on the kind of work that could be done, and how. In more than fifty Kansas counties definite plans of work, even to the appointment of foremen from among the business men for each section of the road to be repaired—even to the designation of motor cars and drivers to transport workers and materials—had been made long before the road days dawned. Practical considerations governed the decision as to the scene of action; here was a mail route the condition of which delayed the rural carrier, or was preventing efficient service; there was a short stretch between two thriving communities that prevented inter-communication; at another spot a mudhole hampered travel to the railroad station; and so forth. Then the county officials outlined the work to be done, and arranged to have all its available road equipment on hand. The business men made lists of workers, and insisted on their presence. The farmers, called into the conferences, arranged for the teams. The women supplied the refreshments. Materials were located, and the program provided for bringing them to the road when needed.

An amazing number of motor cars was seen at every spot where road work was being done. They not only brought the workers from town and farm; they brought

tools, or made quick trips to town or farm for emergency equipment. Trucks hauled materials, and tractors were brought into play to drag plows and to pull the road drags. These latter are not heavy; many a small touring car did service as a tractor to smooth down the roadbed after the plow had stirred the soil, or the wagons had brought the clay or gravel. A car attached to a rope dragged many a heavy rock out of the way.

The heavy rains and floods of the past spring and summer had swamped the county and township officials; there was more work than they could do in a year. Strenuous methods were necessary to render hundreds of roads passable, and to overcome the isolation of farms and towns. There had been even suspension of rural mail delivery in cases. The toil of these 2 days' worked a miracle of restoration.

Now traffic is restored in hundreds of places where it had been suspended; farmers are able to get their crops to market, the current of visiting is resumed, and the plans to purchase motor cars again are broached. Farmers are able to get to town for purchases, too, and deliveries of machinery are again possible. In the majority of districts the conditions were not so serious; yet the added facility of travel and the greater safety to vehicles and comfort to passengers, have made a big difference in the amount of travel.

Different methods were employed in various counties and districts, but all had the same plan—coöperation. At Arkansas City, for instance, nine business men, all enthusiastic motorists and members of the local club, were made separately responsible for the work on nine of the more important county roads. Each planned the work to be done, laying out the tasks and arranging for equipment and machinery with the aid of the county and township road officials. Each kept the men under him aiming at the specific tasks—and all accomplished their purposes.

At Parsons the chamber of commerce organized the volunteer citizens into two teams, which worked in friendly rivalry, one east and the other west of the town. In the smaller towns of this county, business men followed the same plan, many times the workers from the villages meeting those from the larger place. In Leavenworth county there was an apportionment of the roads into districts; 80 per cent of the motor cars in the county were in service, each bearing a tag showing its district and the duties to which it was assigned. In Pettis county the motor club offered prizes to the road overseer who would get the most men to work. At Holton there was a road-dragging contest, with ten entries and prizes in money. At Hays City a new \$21,000 road-building outfit was initiated. The roads of Brown county were in good condition, and the workers cut the weeds. At Newton men worked in the rain for an hour, but the sun rewarded their courage, shining for the rest of the day.

Thus it was in most of the counties of Kansas. Rain interfered here and there, and road days will be held later. Some counties had already planned road work later in the season.

Governor Capper himself headed the party of statehouse and Topeka volunteers who worked northeast of Topeka. He visited many other sections of the state during the 2 days.

Motorists express the view that all this roadday enterprise is only preliminary to work of a more permanent character in road building by the various counties. They say it means finished rock roads throughout the state sooner or later, perhaps sooner. The enthusiasm and interest shown on these days will persist in the form of pressure on county officials if such pressure is necessary; and in acquiescence in expenditures for general road improvement.

WORK FOR DIXIE ROUTING

LOUISVILLE, Ky., Aug. 20—A movement to make sure the passage of the Dixie National highway from Indianapolis to New Albany, Ind., and thence on through Louisville, was launched at the Dixie highway meeting held last week at Glenwood Park, near New Albany, Ind. Under the leadership of Thomas Taggart, one of Indiana's Dixie highway commissioners, arrangements practically were completed for the formation, in each county along the route from Indianapolis to Louisville, of an organization known as a county council, to work for the fixing of this route as the official Dixie highway. These organizations are to be composed of prominent business men, farmers and good roads' enthusiasts. The county councils in the various counties will send delegates to a state convention which will be held this fall to select delegates to represent the state of Indiana at the annual meeting of the Dixie Highway Association next year, which probably will be held in Chattanooga.

Each council will see to it that the portion of the route lying in its particular county is brought up to the standard required by the Dixie highway commission, so that when the commissioners make their tour of inspection this fall they will find the line from Indianapolis to Louisville in such shape that it can be declared officially a part of the Dixie highway, running from Chicago to Miami, Fla.

Floyd county, Indiana, recently appropriated \$41,000 for improving the Paoli pike, this county's section of the route, and other of the counties from here to Indianapolis have done likewise. The boosters of the movement are not satisfied with this; they want to make sure that the work be properly done in each of the counties and that it will be completed by the time the commissioners begin their tour of inspection, thus assuring the road for this section.

Motor Car Panhandlers

New Type of Beggar Developed by Vehicles

Assurance Evidenced by the Free Joy Riders in Boston

BOSTON, Mass., Aug. 21—The motor pan-handler is the name given to a new type of beggar by a Boston motorist who has been held up for rides repeatedly this summer. Being of an inquiring turn of mind he decided to see how far-reaching the thing is and the results were surprising. He found that the men who begged rides felt that it was their right, and that the owner of the car was not to be bothered even with a "Thank you."

Motor beggars are people with money who are able to pay their fare in street cars, or who could afford taxis if they cared to hire one. These men stand at street corners in the suburban districts and watch motorists heading toward the city. They raise their eyebrows and nod their heads in the direction the car is going, sometimes bending their dignity enough to point a finger cityward. The amusing part of it is that they will not demean themselves to request a ride from a mere chauffeur. To do so might mean a tip, and that is out of the question in their social scale. When the motorist slows up he is asked invariably, "Going my way?"

Monumental Assurance

A typical example occurred a few days ago in Boston. The owner of the runabout was heading toward town when a middle-aged gentleman raised a finger as he would in his club. When the motorist halted, he inquired, "Going down town?" The owner said he was. "Then you can take me in. I am going to the state house."

The car bowled along and the self-invited guest praised the car a bit. In a few minutes, they were at the state house, when the man said:

"Well, I'm glad I saw you. It doesn't cost you anything extra to take me along, and it's a great convenience to me. Here we are! Good-bye. Hope to see you again."

The owner of the car was too amazed for words, but he has purposely passed along the same road a few times since hoping to see the man so he can offer him a nickel to take a street car.

Another morning he had to slow up at a crossing and a young man hopped on the running board with all the assurance of an old friend and said, "All right for a ride in town?" He had opened the door and was in before he could be denied. The owner asked him why he did not use the street cars.

"I do when I have to, but I don't like 'em," he replied. "They're too slow, and

you don't get the breeze in one like in this."

When they reached the shopping district, the owner inquired where the youth was going.

"You can take me down to State street," he said.

The owner was startled at the self-assurance of the man. It was not a request to please do it, nor a thought about whether or not the motorist would be going out of his way, State street being on the outer edge of the business district and hard to reach because of traffic. So it proved the last straw and the owner said: "I'm going to stop at the Public Library here for a couple of hours. Good day!" And as the youth got out he seemed to be surprised and peeved that he was not landed at his office door like a bank-owner of a car.

There is also another type, the fellow who is hiking along the country road. He is not a "hobo," but a student with lots of time to make his way. The owner of the roadster was making a trip from Boston to New Haven and was in Rhode Island. He spied two youths, one of whom held up two fingers. The owner stopped. The pair looked clean-cut and respectable. "How far are you going?" asked the motorist. "As far as you'll take us," replied the fellow who signaled. "We are bound from Providence to New Haven."

The motorist took them about 14 miles and dropped them. That night the owner of the car spent in Stonington, Conn. The next day he started on his run and about 40 miles from where he had dropped them, he came upon the two walkers again. They laughed and asked for another lift. The motorist gave it to them. Then they said they were on the way to college, and since starting from Providence they had walked scarcely 3 miles out of 75. Their only baggage was toothbrushes, and when asked what they did with their clothes, they said they sent them parcel post to New Haven.

DODGE IN HIGH GEAR RUN

Boston, Mass., Aug. 20—To prove its power and reliability, a Dodge car made the trip from Boston to Bretton Woods and return on the high gear last week.

The Dodge left Boston in a dense fog and went by way of Crawford Notch. The gears, with the exception of high and reverse, were chiseled off, so there was no alternative but to climb or turn back. Going by way of Crawford Notch is the hardest climb in New England, for there is a tough grade there called Tug-of-War hill that has made many a driver call for a tow in the past. But the Dodge went up all right and continued on down the Merrimac valley, doing the 360.2 miles in 12 hours 48 minutes, or at an average speed of 28.1 miles an hour, though no attempt was made to speed the car for a record. The gasoline average was 16.74 miles per gallon.

Guyot's Charmed Life



GENERAL FRANCHET D'ESPEREY'S CAR IN CROSS-COUNTRY SERVICE AT THE FRONT

French Race Driver, Now Piloting Officer's Car at Front, Has Two Narrow Escapes From Death

PARIS, July 25—Albert Guyot, twice inside the money at Indianapolis, walked around his military car and summed up the repairs under the headings "essential" and "desirable." Under the former, he noted relined connecting rod bearings, new piston rings and a front spring. The second was a lengthy list: the radiator was leaky, new bushes ought to be fitted to the tie rod, the main motor bearings required inspection, there was play in the steering gear, the universal was noisy, new felt washers were needed for the gearbox.

Car Always Near Trenches

In ordinary times, Guyot would have written down "general overhaul" and sent the car to the repair shop for a fortnight. In war, it is different. Officers never will believe that a car that will run is in need of repair. Yet the record of his car was not one of which to be ashamed. A second hand machine, it had gone into military service the previous November, and had been running constantly until the early days of July, never once being allowed to retreat more than 15 miles back of the front line trenches.

The 20-horsepower Panhard had replaced an 18-horsepower Peugeot which was destroyed in rather dramatic fashion. Guyot, who had been a driver since the first day

of August and attached to a general's staff in command of one of the French army corps, had just been given the honorary promotion of driving the general himself. This did not imply an easier task than when driving the subaltern officers, for the general was a man possessing a certain contempt for the Germans and their shells. He made a point of visiting the front line of trenches, in some part of his sector, every day. Wherever he went, the car had to go, and although he had to admit that there were certain difficulties in the way of getting a car into a communication trench, there was no track through the shell-swept forests which was too rough, too muddy or too narrow for his vehicle to negotiate. When it was necessary to decide between a short cut over a straight road exposed to the enemy's guns and a 3-mile detour behind the woods, he invariably shouted: "Go straight ahead, and drive like Hell."

On the late November morning when the Peugeot was retired from war service, the general was out on his usual tour of inspection, his car being preceded by a Delaunay-Belleville carrying some of his staff officers. Snow lay thick on the ground; the war had obliterated the artificial demarcation between road and

field, and the white mantle had served still further to cloak over all such differences and to give an air of peacefulness to the country which the region did not possess.

As Guyot was bringing the car on second gear up a short steep hill, down the opposite side of which the Delaunay had just disappeared, the whine of a shell was heard overhead. An infantryman would have dived for shelter with that instinctive sense of self-preservation perfected by months of warfare. For the military driver, however, there is nothing to do but grip the wheel, press the accelerator pedal and wonder whether you are running into it or out of range. The suspense is never of long duration; sometimes it never develops to actual consciousness.

Racing a German Shell

The Peugeot was just about to begin the descent when the shell burst with a bang 20 yards ahead and 2 or 3 yards behind the Delaunay. How the driver was killed nobody really knows. For a fraction of a second Guyot saw a mass of snow and smoke and dirt in the air ahead of him. Then he had the realization of a wrecked car ahead, a shell hole in the middle of the road, of a car which refused to pull up on the snowy track, and the certain knowledge that if he did not pull

up, swing around, climb over the top of the hill and race for shelter, as he never raced in any grand prix, there would be another German shell on the top of him. The car hit the hole with a sickening crash which shattered every window in the limousine. Almost at the same moment, it swung broadside on and struck the wreckage a terrific blow which turned the nose of the car facing uphill. For what seemed like a few seconds it wobbled unsteadily on its wheels, as if undecided whether to flop into the hole or make a dash for life.

During that terrible moment of suspense, Guyot instinctively shoved his first gear into engagement, put his foot heavily on the accelerator pedal, tugged at the bent steering gear and listened to the roar of the motor and the whine of the gears. The car jumped forward, then stopped with slipping wheels, then found better ground and made an unsteady course up the hill. The second shell came a few minutes later, but a few more broken spokes and a little less water in the riddled radiator were not sufficient to cause a slackening of speed.

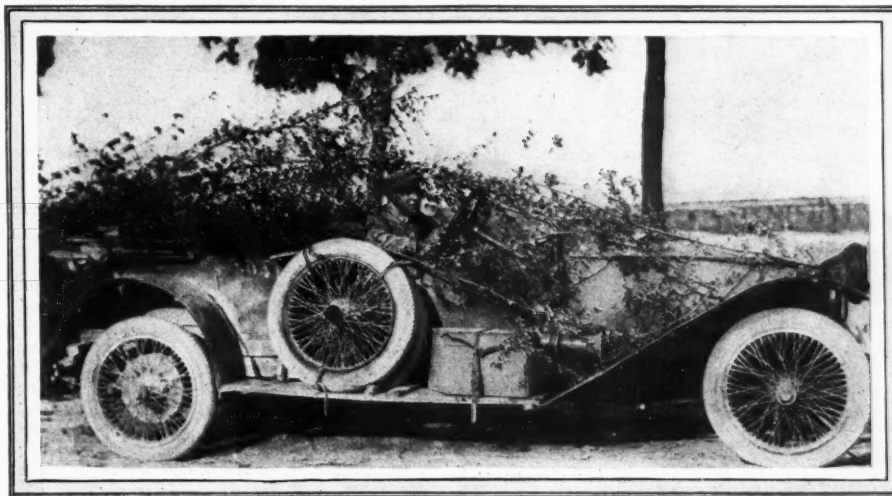
Guyot Gets Permanent Job

When the car was out of range of the guns and a volunteer party had been sent forward to rescue the wounded officers from the wreckage of the Delaunay, the general turned to Guyot and said: "That was a close call; I guess I will keep you as my driver."

They left the Peugeot by the roadside with a broken frame, a cracked water jacket, a bent front axle, a wheel which was not circular, and a body which would have attracted attention could it have been shown on the Paris boulevards.

It was then that the Panhard went into service and that Guyot was rewarded by being considered to indispensable to be granted any leave of absence. But there are limits to the endurance of even a well-tendered Panhard and with his list of "essential" and "desirable" repairs, Guyot made formal application for 3 days' leave to go to the big repair shop at Verdun.

"If I take the car myself, I can get the



CARS OPERATING ON THE FIRING LINE ARE COVERED WITH BRANCHES TO CONCEAL THEM FROM THE ENEMY

work done in 3 days; if it is sent over in the usual way I probably shall be 3 weeks without a machine," he explained. As reserve cars were somewhat scarce in that sector, the general gave Guyot leave of absence—but he cut it down to 48 hours.

A short time before the expiration of his short furlough, Guyot ran into the much bombarded village serving as headquarters for the army corps to which he was attached. All the "essentials" and a few of the "desirables" had been attended to. The car was fit for another 6 months' active service, if no shell ran into it.

Before going to the headquarters to report, he pulled up opposite the staff officers' garage.

"General at home?" he asked of one of the drivers busy with the internal examination of a magneto.

"Kapout," was the grunted reply.

"What do you mean?"

"Mushed up," stated the man with the magneto.

"Here, quit your kidding; tell me, is the general at headquarters?"

The soldier spread a clean rag on the top of a box, placed his magneto parts on it,

got up, and walked towards Albert Guyot.

"My old Guyot," he said deliberately, "you are varnished—absolutely. The next time you get anywhere near the rear you have got to buy the biggest candle you can find and put it up in some church."

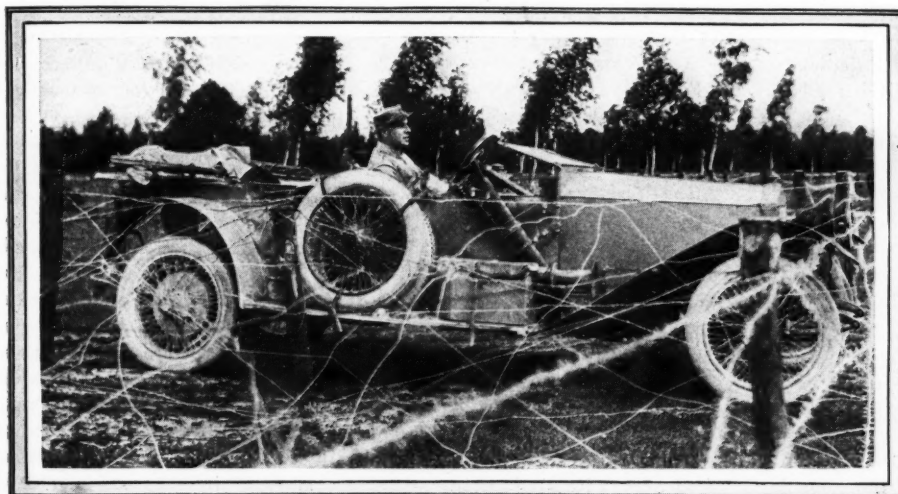
"Hurry up, accelerate, and let's know what has happened," impatiently exclaimed the race driver.

French Officer is Wounded

"Well, here's the story. You went away Tuesday, didn't you? Well, Wednesday morning the general was on the warpath as early as usual. New driver, a volunteer from the south, came with his own car and was selected to take your place. Entire staff went out in two cars—the Renault with the odd wheels and the new one—for a grande tournee. They were going down the G. C. 72, you know the spot, narrow and dusty, straight for 2 kilometres, when somebody said, 'Mon General, they have got the range of us.' General put his head out of the window and said, 'Full speed, beat it.' Well, I guess they went some, but they raised some dust, too, and that put the Boches wise. They had got the range all right. They dropped two shells and they mushed up the whole lot. General seriously wounded, sent to the rear; all the others kapout. First day you have not driven him since the war began, isn't it? Well, he will not want you for a long time now?"

NEW TRUCK CONCERN ORGANIZED

St. Paul, Aug. 23—The Twin City Four-Wheel Drive Co. has bought the J. L. Ware patents for trucks. It is capitalized at \$500,000 and opened temporary quarters at 2324 University avenue. The company has 200 feet frontage of property in the vicinity and plans are being drawn for a three-story office and factory building. Officers elected are: President, J. L. Ware, Minneapolis; vice-president, T. J. McDermott; treasurer, F. J. Drew, Minneapolis; secretary and general salesmanager, M. T. Roche. It is the intention to have trucks ready in 1916.



FRENCH OFFICER'S CAR AMID BARBED WIRE ENTANGLEMENTS PUT UP BY GERMANS TO IMPEDE PROGRESS OF ALLIES

The Yellowstone Trail as Seen by a Close Observer

Blue Book Road Scout Covers Route Named for National Playground and Tells Conditions Along the Way

THE Yellowstone trail is an organization which began about 3 years ago and now is reaching a stage of perfection in transcontinental road building. From a small start of 100 miles in South Dakota it gradually has increased in length until there is a marked trail practically all of the way from Chicago to Seattle and the association's fondest hope is to be able to extend the road through from coast to coast and thus make good its slogan "A Good Road From Plymouth Rock to Puget Sound."

If this organization keeps up its present rate of road building it probably soon will surpass other transcontinental roads. Realizing the importance of having good roads and thus enticing the tourist through their section of the country these people of the west have gone at it in such a manner that they indeed can be proud of what they already have accomplished.

The road conditions of the Yellowstone trail, as a whole, are very good and no tourist, driving any car whatever, need hesitate to drive to the coast by way of this route, as it is free from places which offer impediment to ease in touring.

The Route Itinerary

This road starts at Chicago and goes to Seattle via Milwaukee, Fond du Lac, Oshkosh, Waupaca, Stevens Point, Marshfield, Eau Claire, Hudson, St. Paul, Minn., Minneapolis, Olivia, Montivedo, Ortonville, Millbank, S. D., Aberdeen—the offices of the Yellowstone trail are located here—Ipswich, Mobridge, Lemmon, Hettinger, Bowman, Marmath, Baker, Ismay, Terry, Miles City, Mont., Forsyth, Billings, Livingston, Bozeman, Three Forks, Butte, Anaconda, Deer Lodge, Missoula, Alberton, Superior, Wallace, Coeur d'Alene, Ida., Spokane, Wash., Colfax, Walla Walla, North Yakima, Ellensburg, Snoqualmie Pass and North Bend.

The first part of the road to Milwaukee follows closely the shore of Lake Michigan and is good macadam to the Wisconsin state line. From there to Milwaukee there are several stretches of rather deep sand in dry weather. Milwaukee to Oshkosh and Waupaca is good gravel through rolling country—one of the greatest corn and dairy districts in the United States. From Waupaca to Stevens Point the road is good as far as Amherst and deep sand is encountered from there to Stevens Point. However, this is a comparatively short stretch and should cause the tourist no trouble. From Stevens Point to Minneapolis the road is good with a mixture of gravel and dirt, parts of it passing through the wooded districts of Wisconsin, making it an enjoyable trip. Minneapolis to Ortonville is good gravel all of the way, the

TRAVELING for the express purpose of logging western roads, R. A. Woodall, Official Automobile Blue Book road scout, perhaps is better informed as to actual conditions now prevailing than would be the case were he traveling simply for pleasure. He is making a study of roads and consequently gives closer attention to the arteries of travel than the average tourist. Moreover, he is familiar with most of the continental routes and is competent to draw comparisons. His impressions of the Yellowstone trail are well worth studying.
—Editor.

By R. A. Woodall
Automobile Blue Book Road Scout

first part of it passing through the famous Minnesota lakes region. Oliver to Ortonville is good graded dirt all of the way. Ortonville to Millbank good gravel road practically all the way.

Crossing the state line into South Dakota, just west of Ortonville, Millbank to Aberdeen is good graded dirt with the exception of a short stretch through the hills, which will be in bad shape in wet weather. The road from Aberdeen west to Mobridge is a revelation as far as dirt roads are concerned, especially that part through Edmunds county. The road is wide, well graded and crowned, with numerous long stretches so that fast time is possible. In fact, in May, 1915, a car was driven across South Dakota—a distance of some 375 miles—in 16 hours. This was during the rainy season of the year or the trip could have been made in 12 hours.

At Mobridge the Missouri river is crossed on a ferry and the tourist sets his watch back 1 hour to mountain time. Here the first stretch of poor road is encountered, mainly that across the first part of the Standing Rock Indian Reservation. Owing to the fact that the county has no jurisdiction over this government land, the roads are not kept in very good shape, although there is a movement under way now to improve this road for next year's travel. The poor stretch referred to is but 15 miles long, the worst part of it being a long grade which is rough and rocky in places.

Crosses and Recrosses State Line

After reaching McLaughlin a good graded road again is encountered and followed the balance of the way across the state. The road crosses and recrosses the state line between North and South Dakota several times.

After reaching Lemmon a northwesterly direction is followed across North Dakota to Marmath. Here the Little Missouri river is forded, although a bridge now un-

der construction and when finished October 1 will eliminate the ford.

A few miles west of Marmath the state line into Montana is crossed and good graded road continues on to Ismay. There has been much discussion as to which is the better road between Ismay and Miles City, some people contending that the cut-off which saves a few miles is the better, while others contend that the better road may be had by following the railroad.

Officers of the trail finally decided that it was much better to keep the tourist within sight of civilization and, therefore, adopted the road via Terry. This is a good natural prairie road, some of it being graded, especially the stretch between Terry and Miles City. At Miles City the road follows the south side of the Yellowstone river practically all the way to Billings, most of it being graded and in good shape. In fact, there are several long stretches of natural gravel. From Billings west the tourist gets his first real Rocky mountain scenery, the road following the Yellowstone valley as far as Livingston, the snow-capped Rockies looming up on either side.

Side Trip to Gardiner

At Livingston a side trip runs down to Gardiner, the northern entrance to Yellowstone park. This is a very scenic drive along the Yellowstone river. Continuing west from Livingston the road enters the famous Gallatin valley just east of Bozeman and continues across on an excellent graded road, passing through one of the richest farming districts in the world. Near the end of the valley the road begins winding, with a gradual ascent toward the continental divide, crossing its summit at an elevation of 6,950 feet, and going down the western slope of the Rocky mountains on a wide graded road, entering Butte, the metropolis of Montana. Here are found the greatest copper mines in the world, while a few miles west, over an excellent road, in the thriving city of Anaconda is found the largest smelter in existence. A trip to these mines and through the smelter will be well worth the tourist's time.

From Butte west there are two routes, the present trail going to Anaconda, thence north to Deer Lodge and on to Missoula. The other road which will be open some time this fall goes directly through Anaconda and Phillipsburg, missing Deer Lodge and connecting with the present trail at Garrison. Either road as far as Garrison is in excellent shape, most of it being hard surfaced. There is a stretch 20 miles of rather poor rough road around Garrison, most of it following the creek bed, making fast time impossible. From Missoula west the road enters the Bitter

Root mountains and is very good as far as Alberton, fair from Alberton to Superior and rather poor between Superior and St. Regis, owing to the fact that it is a new road and has not been worked, although this probably will be in good shape for the touring season next year. At St. Regis a good graded road is found, which gets better as it nears Wallace. The road crosses the summit of the Bitter Root mountains into Idaho just east of Wallace and a long down grade is followed all the way into town, the road being excellent, very wide and well graded and the scenery magnificent.

Canyon Bugbear Overcome

Continuing west from Wallace the road is very good, hard-surfaced to the Fourth of July canyon. A few years ago the trip through this canyon seemed to be dreaded even by local people, but there is nothing either in road conditions or turns to cause the most timid tourist any anxious moments. The road through the canyon is a little rough in spots and rather narrow, but good time can be made as the grades are gradual. In fact, there are few, if any, grades on the whole trail which exceed 15 per cent.

After leaving Fourth of July canyon the roads winds along the short of Coeur d'Alene lake, reaching Coeur d'Alene and leaving the mountains behind. At Coeur d'Alene a side trip to Hayden lake is well worth the tourist's time. Continuing on from Coeur d'Alene the great Apple Way is followed, the road conditions on this being very good, in fact, the ordinary person would name it a fine macadam road, whereas in reality the peculiar formation of the soil of this particular section of the country is such that all roads are merely natural gravel, resembling macadam in smoothness and compactness. This is followed into Spokane, the gateway into Washington.

Here the tourist may take his choice of two routes, both of them joining at Ellensburg, one called the Sunset highway, goes via Davenport and Vantage Ferry, and while approximately 90 miles shorter than the Yellowstone trail, probably has less favorable road conditions and not quite so many large towns; also more sand is encountered. There is another road farther north going via Wenatchee and Blewett pass. While the trip through the apple belt of Wenatchee is well worth while, it is advisable for the tourist to return from Wenatchee to Vantage Ferry as the trip through Blewett pass is not at all desirable.

The Yellowstone trail leaving Spokane takes a roundabout way to Seattle, going south through the famous grain sections of Colfax and Walla Walla and the great apple belt of North Yakima, the road being good dirt with stretches of gravel as far as Colfax, where the Central Ferry route is taken, the road becoming a little rough as it nears Snake river. This stream is crossed on a ferry and this is probably the longest stretch on the whole trail where

practically no supplies are available. The distance is about 40 miles.

After crossing Snake river the road is fair dirt to Dayton, then macadam all the way to Walla Walla. The road is very rough and poor as far as Wallula, although this has now become part of the State highway and will, in all probability, be improved this fall. All of these dirt roads in this section of the country will be very bad in wet weather.

Continuing west from Wallula, a better road is encountered and the Snake river is recrossed just east of Pasco, while the Columbia river is crossed between Pasco and Kennewick. Good gravel road for several miles out of Kennewick where an 8-mile stretch of rough dirt across the sage brush is encountered. This also has been taken over by the state highway system, and will be improved next year. At Prosser, the edge of the famous Yakima fruit belt, good macadam takes one all the way to North Yakima, the road passing miles and miles of fine orchards.

Road Leaves Apple Belt

At North Yakima the road leaves the apple belt and crosses some low hills on a good graded road to Ellensburg at the foot of the Cascade mountains. Leaving Ellensburg the road crosses a valley and the long easy climb over the Cascades is begun. Owing to the wonderful piece of road constructed over these mountains the grade on the east side is hardly noticeable and almost before the tourist realizes it, he has crossed the summit of the mountains at Snoqualmie pass with an elevation of 3,110 feet.

From here on the road winds down the western slope of the mountains toward the Pacific and the scenery is magnificent. There are many places where the road may

be seen winding back and forth several hundred feet below, but instead of the customary switch back the turns are well graded and in most cases the outer edge of the road is protected by a wall of rocks or timbers. There are numerous waterfalls on the western slope of the Cascades, one of them being higher than Niagara, although the flow of water practically is nothing at this time of the year.

Leaving the foot of the mountains the road winds over the wooded foot-hills and it is hard to realize that a city the size of Seattle is so close to what apparently is virgin forest. There is an option of three routes into Seattle, one crossing the Kirkland ferry, the second crossing Issaquah ferry, and the third running around the northern end of Lake Washington. This latter option is a few miles longer than the ferry routes.

After leaving the ferry the tourist finds himself in the residential section of Seattle and fine roads lead to any part of the city.

Summing it all up, if the tourist is headed for the western coast he certainly cannot go wrong in following the Yellowstone trail. The markings of this association are a yellow belt with arrow pointing toward Yellowstone park. This trail also has another loop to Glacier park, branching off at Missoula and going north through the Flat Head country to Kalispell and Belton, the entrances to the park.

Glacier National Park

If the tourist is headed west, after visiting Glacier National park he may take the road through Bonners Ferry and Sandpoint into Spokane. This is a fair road as a whole. There are numerous side trips all along the trail, especially after reaching the mountain regions.

Motor Travel Increases Through Reno

Expositions Seem to Increase Their Magnetic Power as Season Advances—Road Conditions

RENO, Nev., Aug. 21—Transcontinental motor traffic passing through Reno seems to have increased during the last week or two. Many thought traffic would begin to fall off as the end of summer approached, but instead it is showing a substantial increase. To what this is due is not known, as it is not thought many easterners know the climate of the western country in the fall. It seems that the exposition is becoming more of an attraction than it was during the early summer.

August, September and the first half of October are really the most delightful months of the year in the west. Daylight lasts until eight o'clock or after and the temperature during the entire 24 hours is unusually pleasant. In the high Sierras snow does not begin to fall until the latter part of October, and sometimes not then. Those tourists who plan to motor to the exposition in September should be able

to negotiate the return trip without encountering storms.

Harry Kendall Thaw passed through here this week with his secretary and attorney. On Wednesday the Lincoln highway moving picture caravan, consisting of five machines and fourteen people, arrived, having been on the road from New York since May 15. On Thursday they were busy taking photographs of places of interest in and around Reno and Friday they started on the last lap of their journey, going via Carson City and the Kings Canyon to Lake Tahoe, Nev., then crossing the line, and going from Tahoe Tavern to Sacramento via Placerville.

H. C. Osterman, consul-at-large of the Lincoln Highway Association, said that the party found the highway good. Bad spots were found, of course, but he said 90 per cent was good and the other 10 per cent fair. They found the roads getting dusty

and Mr. Osterman reported the roads near Sand pass, in Churchill county, as getting bad again, due to lack of rain.

F. D. Lucas, of Oklahoma City, who is traveling to the exposition with a party of friends, reached here Thursday and announced that he had found an excellent road between Reno and Winnemucca and recommended it to those who are on the Overland trail, as that road between here and Winnemucca is reported to be in bad condition.

Pacific from Winnemucca to Gerlach, and from the latter point goes south, passing along Pyramid Lake.

At last the business men of Reno have awakened to the opportunity offered them by transcontinental tourists, and they have started a bureau of information. It is conducted by the commercial club and accurate and up-to-date information about all traveled roads can be had for the asking. In every garage and every public place the club has posted cards announcing that accurate information can be secured there. It has resulted in an average of twenty tourists a day calling at the club. The members of the organization also are taking an interest in it and when they see a car with a foreign number, they don't hesitate to tell the driver to call at the club for information. Besides, the rooms of the club are open to all.

300 Parties a Week

Many Tourists Register at Southern California City

Motorists Tell of Others Who Will Make Fall Trip

LOS ANGELES, Cal., Aug. 20—More motorists from outside California have passed through here during the first half of August than during the whole 1914 season, according to officials of the state registration bureau. Last week there were 300 visiting motor parties in this city and all records are being shattered this week.

It was believed that touring would not be so heavy in August as in June and July, but all predictions of the motor car men of Los Angeles have been upset. Practically every motorist arriving from the east, tells of other parties from his home who are to make the trip across the continent soon. Even now, machines roll in from eastern points in fleets of two, three and four.

There were 51 Fords among the arrivals from outside states last week. The tour-

ing is not all coming west, many California motor parties making runs to eastern points.

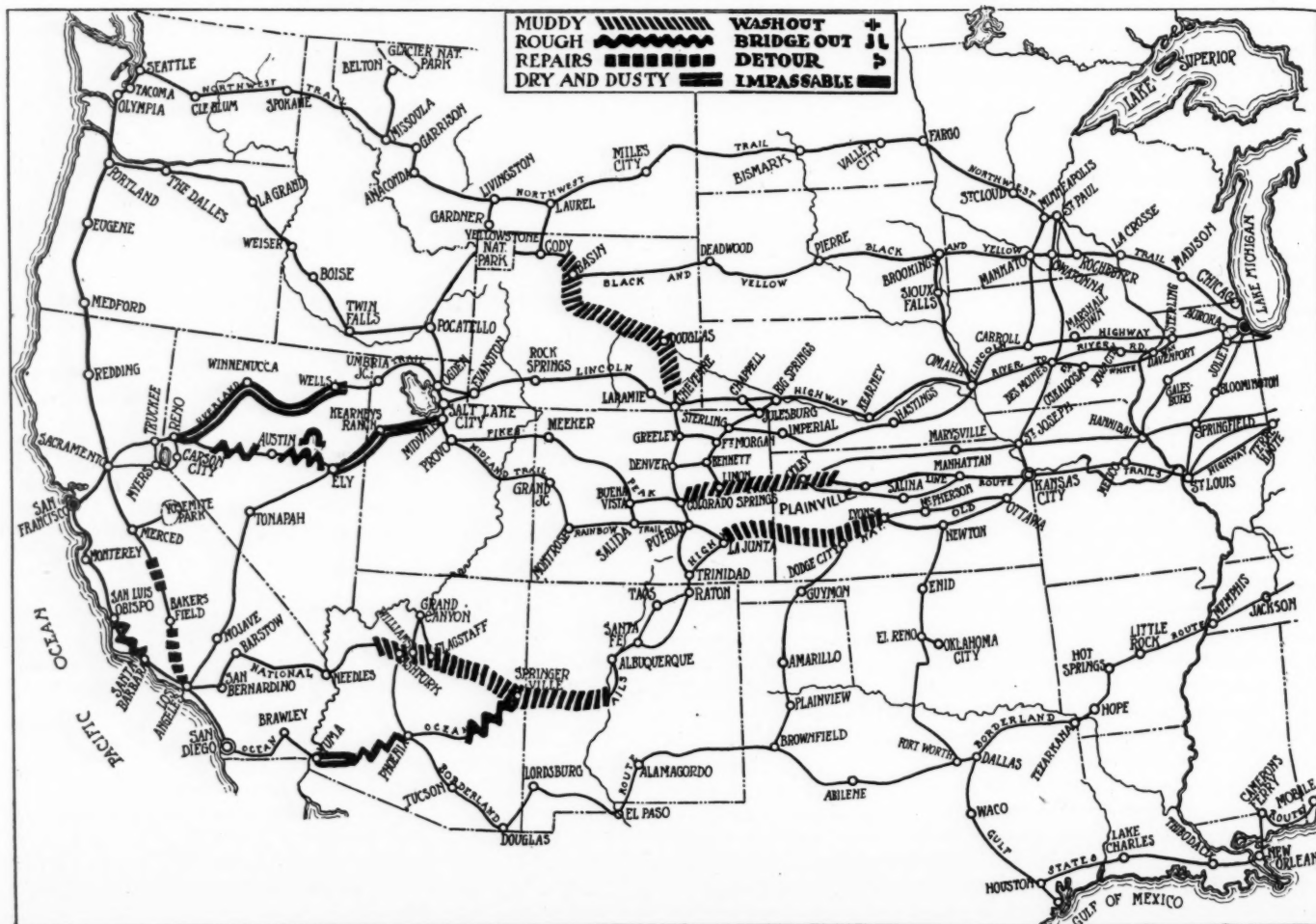
Miss Anita King, photoplay star of the Jesse L. Lasky Co., Los Angeles, and one of the most expert drivers among the motion picture stars, has started on a trip across the continent, following the Lincoln highway. Miss King is driving the car and is unaccompanied.

Los Angeles Tourists Register

Los Angeles, Cal., Aug. 21—Among the many transcontinental motoring parties to arrive in Los Angeles this week were the following owners of cars:

I. F. Harlan.....	Moberly, Mo.
F. M. Van Brunt.....	Houston, Tex.
Charles C. Hauger.....	Indianapolis, Ind.
E. L. Blair.....	New York
L. H. Smith.....	Cedar Rapids, Ia.
Horton L. Chandler.....	Concord, N. H.
Leland P. Spore.....	Sandusky, O.
Mrs. E. H. Holmes.....	Lincoln, Neb.
L. W. Stevens.....	Marlboro, Mass.
Walter P. McIntosh.....	New York
Albert A. Johnson.....	Flushing, L. I.
F. Silvestro.....	Winfield Junction, N. Y.
H. B. Moore.....	Circleville, O.
Lon Smelser.....	Cincinnati, O.
H. C. Krivott.....	Edenton, N. C.
C. N. Van Dyke.....	Phoenix, Ariz.
Dolton Emerson.....	Trenton, N. J.
A. W. Williamson.....	Chicago
F. F. Prentiss.....	Boston, Mass.
Mrs. A. Smith.....	Germantown, O.
Dr. Sheffell.....	Canton, O.
B. Richert.....	New York City
Elmer C. Cord.....	Chicago
L. C. Sinsabaugh.....	Kansas City, Mo.
Melvin J. Gannon.....	Kansas City, Mo.
L. A. Brown.....	New York
A. E. Bell.....	Kansas City, Mo.
C. G. Peters.....	Groversville, N. Y.
L. S. Beebe.....	Schenectady, N. Y.
D. A. Nelson.....	Salina, Kan.
C. S. Smith.....	Norman, Okla.
L. A. Swiney.....	Kansas City, Mo.

Motor Age's Road Condition Map—Changed Weekly



Straight Tips on Transcontinental Trails

Latest Reports on Road Conditions from Those Who Know



TELEGRAPH TIPS

LOS ANGELES, Cal., Aug. 23—Special telegram—The National Old Trails route is deep with mud east of Pueblo and very rough a few miles west of Springerville. East of Amboy, Cal., it is rough and dusty. The Ocean-to-Ocean highway is muddy east of Springerville. East of Globe there is a rough stretch, but this is passable. East of Fort Apache, road is very bad on account of rains. Between Yuma and Phoenix it is dusty and rough in several places. The Lincoln highway rapidly is improving, as there has been no rain for several days. The inland route is dusty and rough from Saugus to the Kern county line, with some construction work. Coast route is rough on the north side of San Marcos pass.—Al. G. Waddell.

Colorado Springs, Colo., Aug. 23—Special telegram—Roads into the mountains from Colorado Springs are good. Pike's Peak Ocean-to-Ocean highway to Salt Lake City is reported in normally good condition. Rains have been general in states east of here and roads are apt to be muddy, although passable. September and October usually are fine months for touring in Colorado and indications point to much travel during the autumn.—A. W. Henderson, Secretary Pike's Peak Ocean-to-Ocean Highway Association.

Reno, Nev., Aug. 22—Special telegram—Every tourist crossing Nevada for the last 7 days reports dusty roads. The Overland trail is said to be worse than the others, particularly west of Winnemucca, Nev., where there are any number of chuck holes and high centers. The Lincoln highway is good with three exceptions and these are passable. For a distance of 3 miles between Ely and Austin there are numerous holes. The exact location of this 3-mile spot could not be learned definitely because of the informant's lack of knowl-

edge of the state. Between Austin and Middlegate, about half way, there is a 4-mile stretch that is reported bad with holes. One mile east of Fallon there also are a number of bad holes reported. Dark clouds tonight threaten showers and everybody is hoping that the rain comes and settles the dust. The road to Lake Tahoe from Reno via the Dog valley grade and Truckee is in good condition. The road to the lake via Carson City and King's Canyon also is good. Both of these roads to the lake are scenic.—Spellier Reinhardt News Service.

Cody, Wyo., Aug. 23—Special telegram—Some heavy rains during the past week between Cheyenne and Cody, but the roads remain in fair condition and offer no delays to motor travel, which continues to increase. The government highway between Cody and Yellowstone park is in excellent condition.—J. M. Schwoob.

Missoula, Mont., Aug. 23—Special telegram—A large number of tourists are passing through this city from eastern points via Yellowstone National park to Glacier National park and the Pacific coast. They report roads in excellent condition.—McCullough Motor Car Co.

Springerville, Ariz., Aug. 24—Special telegram—A good many tourists are passing through here, going both east and west. Roads have been reported in very good condition with the exception of a few stretches that are rough. All correspondents along the roads from here to California advise that roads are in good, passable condition. The road from Springerville to Albuquerque is reported good.—Becker Mercantile Co.

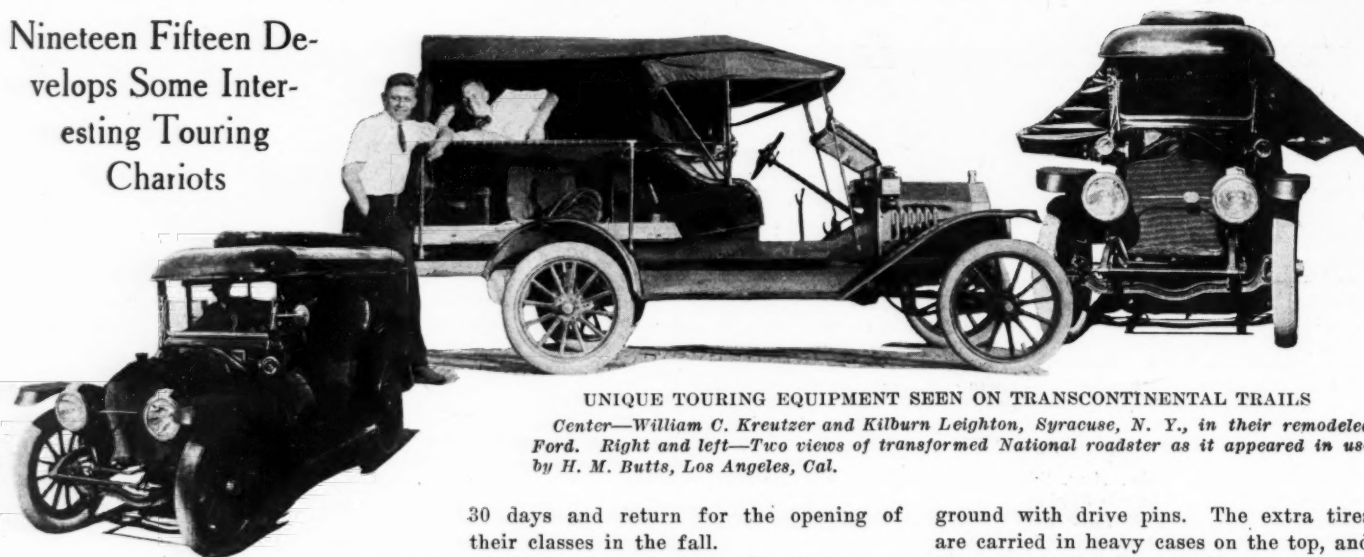
ELY, NEV. [Lincoln Highway]	Aug. 23—The Lincoln highway to Salt Lake City has had no rains for over 2 months and has become dry and rutted in places. Over a section through the Indian Farm in Skull Valley south of Iosepa, caution must be used in driving. In Nevada a 5-mile stretch near Tippet should not be driven at more than 12 miles per hour. To Reno the same conditions prevail as on the road to Salt Lake City. Reno is an easy 2-day drive from here, however. Road to Goldfield is in fine condition, and the 213 miles can be made in 1 day.—G. S. Hoag, State Consul, Lincoln Highway Association.
BILLINGS, MONT. [Yellowstone Trail]	Aug. 23—The Yellowstone trail through Montana is in excellent condition. This route seems to be gaining in popularity, as the trend of travel is constantly upward. The road from Billings to Cody is in good condition, except a few places where grading is being done.—Roscoe C. Wright.
STOCKTON, KAN. [Kansas White Way]	Aug. 23—The Kansas White Way at this writing is in good condition. While this trail suffered from floods earlier in the season, all bridges now are repaired and bad places reconstructed. No sections are such as would offer any impediment to travel. Many cars are passing through every day.—J. Q. Adams, Secretary, The Kansas White Way.
OMAHA, NEB. [Omaha-Lincoln-Denver Route and Lincoln Highway]	Aug. 23—The Omaha-Lincoln-Denver route is good all through Nebraska. The Lincoln highway rapidly is becoming normal after recent rains.—S. E. Smyth, Assistant Secretary, Omaha Automobile Club.
YUMA, ARIZ. [Ocean-to-Ocean Highway]	Aug. 21—The Ocean-to-Ocean highway is passable, though there are some bad places alternating from muddy to rough. The new Gila river bridge is open to travel, but there still is some work to be done on the approaches. Some travel is noted over the new bridge at Palomas. This bridge permits of a 20-mile cut-off between Phoenix and Yuma.—J. A. Ketcherside, Ocean-to-Ocean Highway Association.
TRINIDAD, COLO. [National Old Trails]	Aug. 21—Roads from Raton, N. M., to Pueblo, Colo., are fair, with the exception of a few ruts. I recently made the trip in 5 hours, notwithstanding the fact that there has been considerable rain lately.—J. C. Shy, Manager, Trinidad Garage Co.
COLORADO SPRINGS, COLO. [Pike's Peak Trail]	Aug. 21—The Pike's Peak trail is in fair condition throughout its entire length. Illinois and Indiana sections are considerably better than they have been heretofore. Missouri roads, which have suffered from heavy rains and washouts, rapidly are becoming normal. The Grand river bottom, while somewhat difficult, is becoming better daily. A 15-mile detour is necessary from Belleville to Marysville, Kan., on account of the bridge over the Little Blue river being out. Some rough spots are reported near Dresden, Kan. Rains between Flagler and here have made some sections muddy, but these will be o. k. with a few days of sunshine. Rough spots near Buena Vista, Colo. West of there over Tennessee pass and on to Salt Lake City good roads are reported.—A. W. Henderson, Secretary, Pike's Peak Ocean-to-Ocean Highway Association.
LOS ANGELES, CAL. [Coast and Inland Routes]	Aug. 21—The San Diego Coast route is in good condition and many tourists are covering this trail every day. The San Diego inland route has some chuck holes that require careful driving, but all of this road is passable. Altamont pass on the San Francisco inland route is open to traffic. The temporary bridge over the Little Colorado river on the National Old Trails route is washed out, but a detour has been arranged. Most of the San Francisco Coast route is good at present.—Automobile Club of Southern California.
IOWA CITY, IA. [Red Ball, Red Cross, River-to-River and Chicago, Kansas City & Gulf Routes.]	Aug. 24—Road conditions in this section over the Red Ball route, River-to-River road, Chicago, Kansas City & Gulf highway and Red Cross route probably are the best they have been this season. There has been practically no rain for the last 10 days. If there is any criticism to be made, it might be said the surface of the dirt roads are worn out here and there and filled with dust, hence rain and dragging would really help the roads in this section. While the weather is cloudy, the weather bureau predicts fair weather. It has been very cool and no change in temperature is predicted.—Robert N. Carson, President, Iowa Division, Chicago, Kansas City & Gulf Highway Association.



Routes and Touring Information



Nineteen Fifteen Develops Some Interesting Touring Chariots



UNIQUE TOURING EQUIPMENT SEEN ON TRANSCONTINENTAL TRAILS

Center—William C. Kreutzer and Kilburn Leighton, Syracuse, N. Y., in their remodeled Ford. Right and left—Two views of transformed National roadster as it appeared in use by H. M. Butts, Los Angeles, Cal.

NINETEEN fifteen probably has developed more ingenious adaptions of the motor car, by individuals, toward touring comforts than any other one year in the history of car use. Persons along the transcontinental routes in the west this year have seen touring parties that evidently gave much thought to the planning of their trip other than reading guide-books. It is not uncommon to see people making the transcontinental trek without the necessity for hotel accommodations; in fact, they carry them along with other equipment.

Crude and De Luxe Designs Intermingle

Cars have been fitted for the trip by amateurs as well as professionals. Some rather crude results have been obtained, while in other instances de luxe equipment that makes for the last word in traveling comfort has been made possible. Two instances where car bodies have been redesigned for touring are told below.

William C. Kreutzer and Kilburn Leighton, Syracuse, N. Y., are on their way to the Pacific coast over the Lincoln highway in a unique vehicle, the body of which has been fitted up for sleeping quarters, baggage storage, etc. The two young men conceived the idea of eliminating hotel expenses en route to the exposition, during the hours between classes at Cornell University last winter. Only the chassis, wheels and hood of the original machine remained after the transformation.

Two canvas cot bottoms are stretched on a frame which extends over the back of the car. This forms their bed and it is elevated sufficiently to give baggage storage space beneath. The two boys left Syracuse early in July and planned to make the trip to the Pacific coast in about

30 days and return for the opening of their classes in the fall.

A Los Angelesan—H. M. Butts—corralled the embryonic idea, which, when nursed to maturity, developed the design shown herewith in two illustrations. After a trip from Los Angeles to Denver, Colo., and return, he declares that it offers all the traveling comforts of a Pullman and some more. In the trip mentioned the car carried seven passengers. Mr. Butts designed the body of the car, placing it on the chassis of a National roadster, giving room for seven passengers, where but two were carried before.

Behind the back seats is a compartment in which clothes are hung as in a closet and suit cases are stored. The bedding is carried in rolls inside the top, and just above the rear seat is a compartment where guns, fishing tackle and other equipment are carried. The seats of the car make down, like a Pullman berth, providing sleeping quarters for three persons. Under the seats are stored four steel rods and two wide strips of canvas. These rods fit into sockets on the sides of the body, and two sleeping hammocks are thus swung on these. The side curtains, being of extra length, may be drawn over the guy straps, affording perfect shelter. Each of these hammocks accommodates one person. On the right running board are strapped several heavy planks, and from these may be created a table or a comfortable double bed on the rear of the car, the frame being anchored into the

ground with drive pins. The extra tires are carried in heavy cases on the top, and throughout the car are small compartments for various articles. The machine is electric lighted and otherwise fully equipped.

While the car was first especially designed for this 1,600-mile trip, it has since been used for hunting and fishing expeditions, and has proved particularly convenient and serviceable for this purpose. Only a few minutes are required to convert it into a camp for the night, and in the same period of time it may be made again ready for the road.

BRUSH ROADSTER CARRIES SEVEN

A prize motor trip in the oddity class is being made by H. E. Hardy and family, Florence, Colo., who are traveling to California seven strong, in a Brush roadster. The party includes three grown people and four children, extra seats being improvised on the rear of the car and on the radiator. Mr. and Mrs. Hardy, her mother and the four Hardy children form the party. Three ride in the regular seat, three in the built-on seat behind, and one of the boys rides on the radiator.

They make good time in spite of the heavy load for the little car. They report making the 87.5 miles from Grand Junction, Colo., to Thompson's, Utah, in 5 hours. This is across the desert portion of the Midland trail, and this unique trip is regarded as a compliment to this scenic, transcontinental route, and also as a substantial evidence of its passability.

Answers to Inquiries for Route Information

Sturgis, Mich.—Menasha, Wis.

STURGIS, MICH.—Editor Motor Age—Kindly give me the best route from Sturgis, Mich., to Menasha, Wis. Will this route necessarily have to go directly through Chicago?—John C. Howard.

From Sturgis drive to Shipshewanna and west 30 miles to South Bend. Due to road

construction work you will have to go to west from South Bend through Galien, Three Oaks, New Buffalo, Michigan City, Porter, Highlands, 82 miles. Here turn south and go 4 miles to Schererville, picking up the Lincoln highway and going west on it to Geneva, Ill., through Dyer, Frankfort, Joliet, and Aurora to Geneva, Ill., 68 miles. Here

leave the Lincoln highway, and go north through Elgin, Algonquin, and Hebron to Lake Geneva, Wis., 57 miles. This routing avoids Chicago.

From Lake Geneva bear due north for 94 miles through Lauderdale Lakes, Oconomowoc and Mayville to Fond du Lac over a gravel road practically the entire distance. Driving along the east side of Lake Winnebago on a gravel road, you should pass through Brotherton and Sherwood to Menasha, 42 miles.

Complete running directions in volume 4 of the Blue Book.

Superior, Wis.-Oshkosh, Wis.

Superior, Wis.—Editor Motor Age—Kindly give me the best route from Superior to Oshkosh, Wis.—Thomas J. Budnick.

From Superior drive through Ashland to Ironwood over a good road; then via Mercer, Minocqua, Rhinelander and Tomahawk to Merrill. By going via Rhinelander you will encounter better roads.

Now drive due south 50 miles through Wausau to Stevens Point, and east 79 miles via Amherst, Waupaca, Fremont and Dale to Oshkosh.

Volume 5 of the Blue Book covers routing from Merrill to Oshkosh.

Terre Haute, Ind.-Union City, Tenn.

Union City, Tenn.—Kindly give me the best route, mileage and road conditions from Terre Haute, Ind., to Union City, Tenn.—Duward B. Wheeler.

Bear due south from Terre Haute for 117 miles on a gravel road through Sullivan, Carlisle and Bruceville to Vincennes, and macadam or gravel most of the distance through Princeton and Stringtown to Evansville. Continue south through Madisonville to Hopkinsville, Ky. At Hopkinsville turn west and go through Cadiz, crossing the Tennessee river into Golden Pond, west through Murray and Fulton and southeast to Union City.

South Haven, Mich.-Nashville, Tenn.

South Haven, Mich.—Editor Motor Age—What is the best route from South Haven, Mich., to Nashville, Tenn.?—O. L. Oliner.

Drive 30 miles to St. Joseph, 34 miles, via Berrien Springs and Niles to South Bend, Ind. Go due south 140 miles to Indianapolis through Plymouth, Rochester, Peru and Kokomo; then to Louisville, Ky., via Columbus, Seymour, Scottsburg and New Albany, Ind. Nashville, Tenn., is reached via Mt. Washington, Bardstown, Buffalo, Bear Wallow, Scottsville and Gallatin, a distance of 192 miles.

Mercer, Pa.-Cincinnati, O.

Mercer, Pa.—Editor Motor Age—Would like outline of best route from Mercer, Pa., to Cincinnati, O.—J. M. Van Horn.

Drive south 61 miles through Harmony and Wexford to Pittsburg. Go west on the National road 60 miles through Canonsburg and Washington to Wheeling. Leave the National road at Wheeling, because of road construction, and route to Columbus, O., 153 miles via Cadiz, Uhrichsville, Tuscarawas, Coshocton, Dresden and Frazeyburg. This is a good gravel stretch and is considered a beautiful trip.

It is a trip of 107 miles from Columbus to Cincinnati over excellent macadam and gravel through London, Cedarville, Xenia, Lebanon, and Sharon.

Harris, Mo.-Centralia, Wash.

Harris, Mo.—Editor Motor Age—Kindly give me the best route from Harris, Mo., to Centralia, Wash., via Yellowstone park.—A. W. Dickson.

Drive north to Des Moines, Ia., and west over the Great White way through Adair, Atlantic and Council Bluffs to Omaha, 143 miles. Then follow the red, white and blue bands of the Lincoln highway west to Cheyenne, Wyo., through Fremont, Columbus,

Grand Island, Kearney, Gothenburg, North Platte, Ogallala, Big Springs, Chappell, Kimball, and Bushnell, 547 miles.

Go northwest 148 miles to Douglas, west to Casper 53 miles, north through Thermopolis and Basin to Cody, 264 miles, turning west at Cody and driving 54 miles to the eastern entrance of Yellowstone park.

Leave the park at the north entrance, Gardiner, and go north 53 miles to Livingston, here turning west going 139 miles to Butte, 139 miles to Missoula, 156 miles to Wallace, 86 miles to Spokane, and 346 miles to Seattle, Wash.

At Seattle turn south and drive through Kent and Auburn to Tacoma, then over the Pacific highway 31 miles to Olympia, and 26 miles to Centralia.

Blue Book volume 5 contains running directions from Des Moines to Seattle, and volume 6 the balance. Price, \$2.50 per volume. Blue Book Publishing Co., Chicago.

Kankakee, Ill.-Buffalo, N. Y.

Kankakee, Ill.—Editor Motor Age—Kindly give me the best route from Kankakee, Ill., to Buffalo, N. Y. Also, what would be the cost of a Canadian license for a 22.5 horsepower car? Does one have to furnish a bond in going through Canada?—A. E. Ryckman.

From Kankakee drive 12 miles to Mokenza, 30 miles to Crown Point, then through Merrillville, Hobart, Porter, Michigan City, Grand Beach, New Buffalo, and Gallen to South Bend. An excellent road extends through Goshen, Wawaka, Bryan, Napoleon, and Bowling Green to Cleveland.

From Cleveland there is a good gravel or stone road through Unionville, Ashtabula and Conneaut to Erie, 102 miles; and a good road the balance of the way through North East, Westfield, Fredonia and Irving to Buffalo, 89 miles.

By writing to the Collector of Customs, Buffalo, N. Y., or to the Guarantee Co. of North America, 1882 Continental and Commercial National Bank building, Chicago, it is possible to secure bond and customs touring permit for \$5. This permit can be mailed to the tourist and is good for crossing into Canada at any port of entry without formality, and also for re-entry into the United States at the same or any other port of exit.

Memphis, Tenn.-Mammoth Cave, Ky.

Memphis, Tenn.—Editor Motor Age—Kindly give me the best route from Memphis to Mammoth Springs, Ky. Should I go by way of Cairo, Ill., or by way of Nashville, Tenn? How far is it from Mammoth

Springs to Dawson Springs?—Leroy H. Friedlander.

We do not know of a Mammoth Springs, Ky., and presume you have in mind Mammoth Cave; therefore, we are routing you to the cave, via Nashville. The road via Cairo is shorter but much rougher. Leave Memphis and drive east for 159 miles through Collierville, Saulsbury, Corinth, Iuka, and Barton to Tusculumbia; turn north and head for Nashville, 122 miles, through Green Hill, Lawrenceburg, Sandy Hook, and Columbia.

To reach the cave drive 112 miles via Gallatin, Scottsville, Glasgow and Cave City. Good macadam to Gallatin; balance of the way very fair.

To reach Dawson Springs from Mammoth Cave drive southeast through Glasgow Junction to Bowling Green, 131 miles; turn west and go through Russellville and Elkton to Hopkinsville. Here make local inquiry as to directions to Dawson Springs.

Inwood, Ia.-Hastings, Minn.

Kindly give me the best route and distances from Inwood, Ia., to Hastings, Minn.—C. S. Renshaw.

Go east 109 miles to Spencer over the North Iowa pike, the way points being Canton, Rock Valley, Sanborn and Hartley. Continue east on same highway, going 107 miles through Emmetsburg, Wesley and Clear Lake to Mason City.

Turn north onto the Inter-State trail, following the blue and white bands through Northwood, Albert Lea, Owatonna, Faribault and Northfield to Farmington, 187 miles. Here you leave the Inter-State trail, turning east and going to Hastings, which is only a few miles from Farmington.

Volume 4 of the Blue Book contains running directions from Inwood to Farmington.

Aberdeen, S. D.-Jacksonville, Fla.

Aberdeen, S. D.—Editor Motor Age—Kindly furnish me with information regarding the best route from Aberdeen, S. D., to Jacksonville, Fla., via St. Louis. Where can I get reliable road maps for this trip?—F. H. Brown.

Drive east to Ortonville; here turn south, heading for Omaha, Neb., going through Milbank and Altamont to Brookings, 85 miles; Dell Rapids, Sioux Falls, Beresford, Elk Point, Sioux City, Oakland and Blair to Omaha, 254 miles. Go 161 miles through Randolph, Tarkio and Maryville to St. Joseph, picking up the Inter-State trail, which goes through Dearborn and Smithville to Kansas City, 63 miles.

To reach St. Louis, go east from Kansas City, 295 miles, through Independence, Lexington, Marshall, Boonville, Columbia, Fulton, Wentzville and St. Charles.



BRUSH ROADSTER CARRIES SEVEN AFTER EXTRA SEATS ARE IMPROVISED
H. E. Hardy, wife, mother-in-law, and four children on trip across Rockies

Heading for Louisville, Ky., drive 155 miles through Carlyle, and Olney to Vincennes, and 129 miles through Washington, Shells and Orleans to Louisville. Turn south at Louisville and head for Nashville, going via Bardstown, Buffalo, Bear Wallow, Glasgow and Gallatin to Nashville, 192 miles.

From Nashville drive 247 miles to Chattanooga, through Murfreesboro, Huntsville, Karkinsville and Rankin's Ferry; 127 miles via Ringgold, Calhoun and Cartersville to Atlanta, Ga.; 96 miles via Jonesboro, Pomona, Barnesville and Lorane to Macon; 149 miles through Vienna, Sycamore, Lenox, Harira and Mineola to Valdosta, Ga., and 142 miles through Ellenville, Fla., Falmouth, Live Oak, Oluster, McClenney to Jacksonville.

Marion, Ia.—Yellowstone Park

Marion, Ia.—Editor Motor Age—Kindly give me the best route from Marion, Ia., to Yellowstone park.—J. H. Walter.

Drive directly west on the Lincoln highway to Cheyenne, Wyo., through Cedar Rapids, Belle Plaine, Marshalltown, Ames, Ogden, Carroll, Denison and Logan to Omaha, 303 miles. The Lincoln highway markers—red, white and blue bands, will direct you across Nebraska and into Wyoming through Fremont, Columbus, Grand Island, Kearney, Gothenburg, Ogallala, Big Springs, Chappell, Kimball and Bushnell to Cheyenne, 547 miles.

Leave the Lincoln highway at Cheyenne and go northwest 148 miles to Douglas, west to Casper, 53 miles, north through Thermopolis and Basin to Cody, 264 miles, turning west at Cody and driving 54 miles to the eastern entrance of Yellowstone park.

Volume 5 of the Blue Book contains complete running directions. Price, \$2.50. Blue Book Publishing Co., Chicago.

Carbondale, Ill.—Malden, Mo.

Carbondale, Ill.—Kindly give me the best route from Carbondale, Ill., to Malden, Mo.—John Jolly.

Drive to Murphysboro, then go south 82 miles to Cairo, Ill., through Grand Tower, Jonesboro, Anna, Mill Creek and Cache. Cross the Mississippi river at Cairo, then go to Charleston. Make inquiry here as to whether or not it is possible to go directly west to Bloomfield, then south through Dexter to Malden. If you cannot make a short-cut to Bloomfield, go north from Charleston to Cape Girardeau, then swing down through Allenville, Aquilla, Bloomfield to Dexter, 53 miles. Malden is a few miles directly south of Dexter.

South Bend, Ind.—Pinehurst, N. C.

Ferrysburg, Mich.—Editor Motor Age—Kindly give me the best route from South Bend, Ind., to Pinehurst, N. C.—J. H. Johnston.

Drive to Cleveland, 272 miles, over a gravel and macadam road through Goshen, Ligonier, Bryan, Napoleon and Bowling Green, then southeast 145 miles over a brick highway through Bedford, Ravenna, Alliance, Salem, Unity, Beaver Falls and Rochester to Pittsburgh.

Now swing down to Bedford, Pa., 97 miles. This is a macadam road the entire distance, somewhat hilly but with easy grades. You should pass through Wilkesburg, Greensburg, Ligonier and Schellburg. A good macadam and gravel road extends east to McConnellsburg and good gravel through Mercersburg to Greencastle, 55 miles; here turn south and drive 12 miles to Hagerstown.

Going over the Shenandoah Valley pike route through Martinsburg, Winchester, New Market and Harrisonburg to Staunton, Va., 133 miles. Good pike road all the way with nineteen toll gates. At New Market a side trip might be made to the Luray caverns, and at Mount Crawford the Grottoes of the Shenandoah can be reached.

Drive east 39 miles over Rock Fish Gap, the summit of the Blue Ridge, to Char-

lottesville. It is a rough road over the mountain. At Charlottesville turn south, heading for Lynchburg, 71 miles, through a hilly country, passing en route Lovingsston and Amherst. This is a graded clay, rough and poor road, not recommended in wet weather. Now go 74 miles to Danville, Va., over fair-to-good roads, with some steep hills.

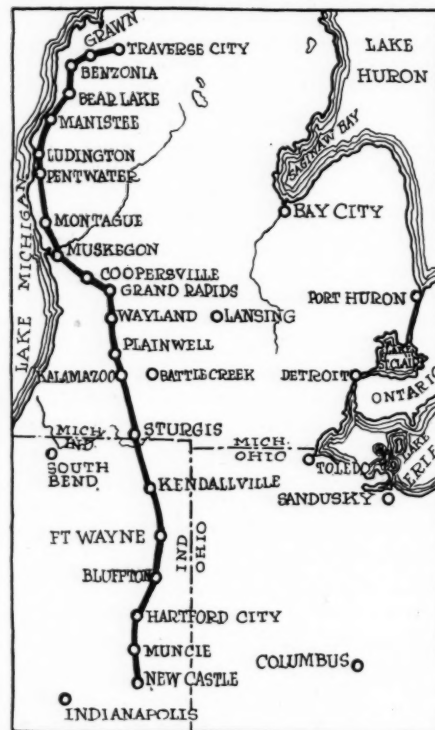
It is 48 miles to Greensboro, the first 24 miles mostly on the Southern railway right-of-way; last 9 miles macadam, rolling country with some steep hills. The last stretch of 81 miles is through Ashboro, Candor and West End to Pinehurst; mostly improved gravel with some macadam.

Volumes 3 and 4 of the Blue Book cover this entire routing.

Newcastle, Ind.—Traverse City, Mich.

Newcastle, Ind.—Editor Motor Age—Kindly give me the best route from Newcastle, Ind., to Traverse City, Mich., also send me road guide or map.—J. W. Smith.

Drive north 20 miles to Muncie, then 70 miles over good stone or gravel road through



ROUTE MAP NEW CASTLE, IND.—TRAVERSE CITY, MICH.

Hartford City and Bluffton to Fort Wayne, Ind. Now go 97 miles via Kendallville, Sturgis and Mendon to Kalamazoo, and due north 48 miles via Plainwell and Wayland to Grand Rapids, Mich.

A macadam or gravel road extends northeast from Grand Rapids through Coopersville to Muskegon, 46 miles; here you pick up the West Michigan pike and travel north 95 miles to Manistee, by way of Montague, Pentwater, and Ludington, over a gravel road. The last stretch of 65 miles through Bear Lake, Benzonia and Grawn to Traverse City is mostly all gravel and is a beautiful trip.

Blue Book, volume 4, contains complete running directions. Price, \$2.50; Blue Book Publishing Co., Chicago.

Iowa City, Ia.—Aberdeen, S. D.

Oxford, Ia.—Editor Motor Age—Kindly give me the best route from Iowa City, Ia., to Aberdeen, S. D., together with road conditions and mileage. Is the route marked?—Dr. E. L. Richey.

Drive west on the River-to-River road, 133

miles through Marengo, Grinnell, Newton and Mitchellville to Des Moines. Here turn north on the Inter-State trail and go 271 miles to St. Paul, the blue and white bands guiding you through the towns of Nevada, Iowa Falls, Hampton, Mason City, Northwood, Albert Lea, Owatonna, Faribault, Northfield, Farmington and Rosemont to St. Paul.

Drive west 9 miles to Minneapolis, then 101 miles through Maple Plain, Cokato, Darwin and Litchfield to Willmar; and 83 miles via Benson and Appleton to Ortonville. Aberdeen is a few miles west of Ortonville.

An excellent alternate would be to go west on the Great White Way through Stuart, Adair, Atlantic and Oakland to Omaha, then north through Onawa, Sioux City, Beresford, Elk Point, Sioux City, Dell Rapids, Brookings, Altamont and Milbank to Ortonville, 336 miles.

Watseka, Ill.—Glenwood City, Wis.

Watseka, Ill.—Editor Motor Age—Kindly give me the best route from Watseka, Ill., to Glenwood City, Wis.—Bert Center.

From Watseka go north to Kankakee, and north 37 miles to Joliet. Bear northwest to Elgin, 45 miles, then through Algonquin, and Hebron to Lake Geneva, Wis., 45 miles.

Go north to Oshkosh, 113 miles, a gravel road extending most of the distance through Elkhorn, Lauderlake Lakes, Oconomowoc, Mayville and Fond du Lac. Heading in a northeasterly direction drive 79 miles through Dale, Fremont, Weyauwega and Amherst to Stevens Point. Now drive 117 miles west through Hewitt, Marshfield, Withee, and Stanley to Chippewa Falls. Glenwood City is only a few miles west of Chippewa Falls.

A good alternate would be to go from Lake Geneva west to Madison and on through Baraboo and La Crosse to St. Paul, instead of north through Fond du Lac and Stevens Point. Such a routing from Lake Geneva would be west 78 miles through Delavan, Janesville and Stoughton to Madison; 145 miles via Sauk City, Baraboo, Reedsburg, Kendalls and Cashton to La Crosse, and 162 miles through Witoka, Winona, Rochester, Zumbrota and Cannon Falls to St. Paul. At St. Paul turn east and drive 63 miles through Hudson, Baldwin and Knapp to Menomonie, inquiring at the latter place as to directions to Glenwood City, which is a short distance north. Volume 4 of the Blue Book contains running directions.

Bloomington, Ill.—Bowling Green, Ky.

Bloomington, Ill.—Editor, Motor Age—Kindly give me the best route from Bloomington, Ill., to Bowling Green, Ky.—Howard J. Read.

Drive east 51 miles to Champaign, Ill., then east through Catlin, Covington, Ind., Crawfordsville and Jamestown to Indianapolis, 128 miles. Go south 124 miles to Louisville via Columbus, Seymour, Scottsburg and New Albany, Ind., then through Mt. Washington, Bardstown, Buffalo and Bear Wallow to Cave City, 102 miles; and through Glasgow Junction to Bowling Green. Barring rains the roads should be in good condition in September.

Evansville, Ind.—Colorado Springs, Colo.

Lewisport, Ky.—Editor Motor Age—I wish to take a motor trip and desire information on route from Evansville, Ind., to Colorado Springs, Colo., either via St. Louis and Kansas City, or via Terre Haute, Ind., Hannibal, Mo., and St. Joseph.—E. H. Robertson.

From Evansville, drive north to Vincennes, there turning west through Salem to St. Louis. From the Mississippi the route lies west through Columbia and Marshall to Kansas City. At this point pick up the Santa Fe trail and follow through Ottawa, Emporia, Florence, Newton, Hutchinson, Lyons, Great Bend, Dodge City, Syracuse and La Junta to Pueblo; here turn north through Fountain to Colorado Springs.

The Motor Car Repair Shop

Testing Spark Plugs Under Pressure—Repairing Fuel Line

Repairing Broken Gasoline Line

It is a good plan to always carry a short length of rubber tubing in the tool kit of the car when it is to take a trip of any duration. Despite the attention given to supporting the gasoline line and to the good grade of tubing used, the piping will sometimes break, due to unnoticed chafing or vibration due to some attachment coming loose. Often such pipe breaks occur close up to the carburetor or near the union with the gasoline tank, and this makes them even more difficult to repair satisfactorily.

Should there be a break close to either of these, it may be impossible to slip a piece of rubber tubing over the end attaching to carburetor or tank, and in that case a temporary repair may be effected by using the tubing to slip over the pipe end, and then pushing it within the connection. Then adhesive tape should be wound around the whole repair, and without any great consideration for the amount of it used—the more the better if it is wrapped properly. See Fig. 2.

Tire Cement Handy

Usually the tool kit contains some tire cement, and this might be spread over the tape to make a better job against leakage. One of the main things to remember is to support the gasoline line close to or at the break, so that the strain of holding the pipe in place will not fall on the rubber connecting tube or on the tape. It would soon pull loose again from road jarring.

It is easy to make a very presentable temporary gasoline line repair, should the break happen to be at a point where there is room for the rubber tubing to be slipped over both broken ends. This should be done so that the broken ends come butt against each other, and there should be at least $1\frac{1}{2}$ inch of tape overlapping on each part of the pipe. Then take the tape and wind it carefully and thoroughly over all of the rubber joint, so as to securely seal the leak. Then above all, attach the pipe at the break to some substantial part of the chassis so that it cannot shake and pull itself in two again. Such a repair has been known to last for 100 miles, but at best it is only temporary and should not be expected to hold longer than to the first garage where there are facilities for properly repairing the break or for supplying an entirely new gas line.

Spark Plug Tester

It is a fact that a spark plug that will work well at atmospheric pressure may fail when subjected to the compression pressure in the cylinder. Furthermore, a

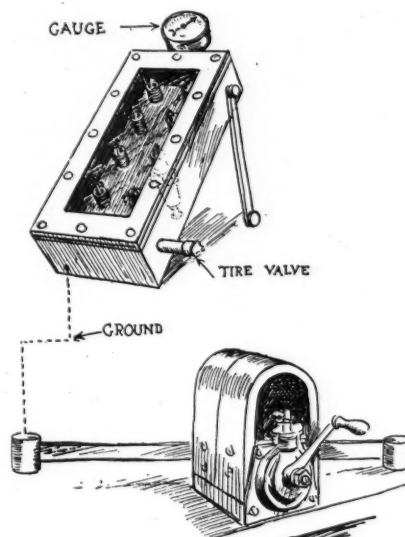


FIG. 1—A SPARK PLUG TESTER

The plugs are secured in a box with a glass case where pressure is maintained equal to that in the cylinder

magneto may furnish sparks that are satisfactory under atmospheric pressure yet when the plug is subjected to compression pressure the spark may be weak or may not occur at all. A device which reproduces working conditions in the cylinder and which will quickly show whether the trouble is in spark plugs or magneto is illustrated in Fig. 1. It is merely a box with a glass face. There are holes in the back into which spark plugs may be inserted, and the pressure inside is brought to the required amount by means of a hand pump attached to a tire valve as shown. A gauge registers the pressure. The sparking of the plugs can be observed through the glass, which is $\frac{5}{16}$ inch thick.

How Magneto Is Tested

Ordinarily there are eight plugs, known to be in perfect condition, in the box, and these are used in testing magneto or

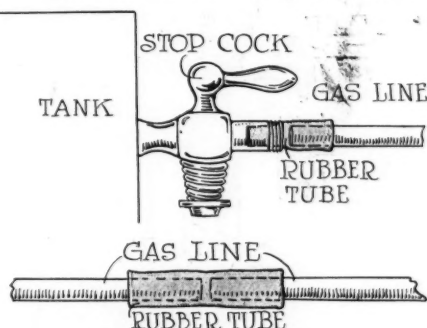


FIG. 2—REPAIRING FUEL LINE

The use of rubber tubing as shown above is good for temporary repair of the gasoline pipe

coil. If a good, hot spark is delivered at all plugs when they are subjected to compression pressure, it is known that magneto or coil is not at fault.

If a magneto is to be tested, it is grounded on the car in front of the testing box, the high-tension leads are run to four, six or eight spark plugs, as the case may be, pressure is applied, and the armature is cranked by hand. Any defect in the magneto is perceptible by the character of the sparks.

If the magneto or coil are found to be in good condition the spark plugs are removed from the motor and tested. The spark plug holes have all types of threads, S. A. E., pipe and metric, so that any type of plug may be tested.

Some Battery Hints

The manager of a battery service station in Chicago complained recently of owners ruining storage batteries by attempting to charge them by the addition of some corrosive substance to the electrolyte. In the station in question there were some eight batteries which were returned in such condition as to be unfit for further use, because sal ammoniac, hydrochloric acid, vinegar, etc., had been added. It may seem absurd to think that a motor car owner or garageman will use these chemicals in a battery, but it nevertheless is a fact. One of the most difficult things this service station has to do is to impress upon the owner the necessity of charging the battery with electricity only and not with a chemical agent such as acids.

A record shows that returns due to the use of chemicals as above stated, are from the smaller towns where there is perhaps only one garageman. For some mysterious reason there are many such men who are misinformed as to the care a battery should have and these men use the methods mentioned with the result that the batteries soon give out.

Owners will have little battery trouble if they will examine the cells weekly to see that they have the proper level of water, which means the solution must cover the plates. If the plates are uncovered add distilled water only. Clean the terminals periodically so as to free them from copper sulphate, a hard green deposit. Take gravity readings every week or so and see that the solution has a gravity of between 1,280 and 1,300.

If the car has no generator the battery should be charged at intervals by an experienced man. If there is a generator on the car, the charging is, of course, taken care of.



The Readers' Clearing House

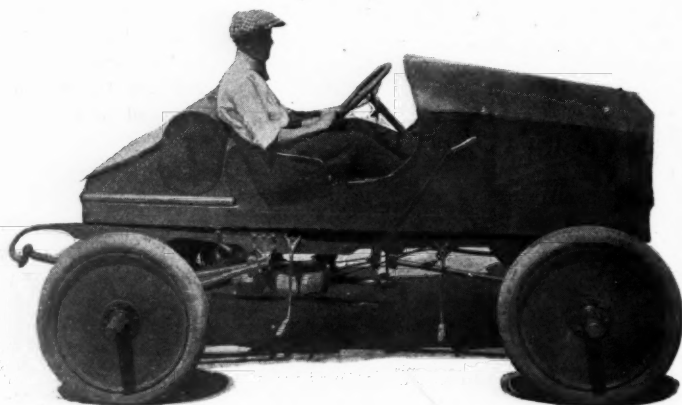


FIG. 1

How a Motor Age reader redesigned a single-cylinder Cadillac using a false radiator and hood

BATTERY SHOWS LOW GRAVITY Each Cell When Tested Should Indicate 1,280 to 1,300

WESTPORT, IND.—Editor Motor Age—I have had a 1915 model T Inter-State roadster for about 4 weeks. There seems to be something wrong with the electrical part. It is equipped with a Remy two-unit system and Willard 6—80 ampere battery. When I received the car, I tested the battery with a hydrometer which showed 1,200, 1,200, 1,250. After running the car perhaps 300 miles and starting car by hand crank, battery did not come up so I had same charged and on arrival home tested it, which showed 1,250 for the three cells and has stood close to this point ever since.

When running at night the lights are good, but when I slow down to where telltale on dash shows discharge they go down. With the battery they loaned me when mine was being charged, the lights were the same at all speeds. The telltale shows charge with all lights on at 15 miles per hour and lights off at 11 miles per hour. The Remy people at Indianapolis say the generator is alright and the Willard people say the same of the battery, but I know there is something wrong, at least I feel that way, and that is the battery. The instructions are to fill battery up to bottom of vent hole. If I do this the battery will boil over. The bottom of battery box is now covered with a white solution, so for some time have kept the plates covered about $\frac{1}{4}$ inch. If Motor Age can give me a little advice from this information, same will be appreciated.—S. A. Pearce.

In the first place, your battery is under-charged and if you have been trying to keep the gravity at 1,250 it has been only about two-thirds charged all the time. The battery should show between 1,280 and 1,300 gravity for each cell. If you will have your battery charged by someone who knows, your troubles will vanish. The sloppage of which you speak may be caused by the holes in the vent cap nipples being plugged up. You seem to be filling the battery properly. Use only distilled water for this and never add acid nor allow the garageman to do so. Some garagemen add acid in order to bring up the gravity and then tell the owner the gravity was brought up by charging.

Motor Has a Bad Knock

Pelham, N. Y.—Editor Motor Age—Can Motor Age tell me where to look for a knock in my motor? I have just had it overhauled and the cylinders rebored and new piston rings and wrist pins put in. When I start the engine it has an awful knock and no one seems to be able to locate it. I have had new bearings put in and the bearings on the crankshaft are good as new. I also had the shaft taken out and tried in a lathe to see if it was out of true. The knock came in 1 day, started in the morning and by night after running about 100 miles,

sounded as if the piston head would fly off. This is a Herreshoff car.—Eugene L. Lyon.

With all the bearings fitted properly and the other parts you mention in good shape, Motor Age is inclined to believe that one of the connecting rods is sprung. One of the workmen may have left a tool in the crankcase.

OPERATION OF MAGNETO DRIVE Used on the Owen Car—Advantages of Overhead-Valve Motor

St. Louis, Mo.—Editor Motor Age—What does a Stutz, Case and Maxwell racing car cost?

2—What spark plugs do the best racers use?

3—Do the Stutz Motor Car Co. make their own motor and is it a valve-in-head motor?

4—What is and who makes the Owen magnetic car?

5—What are the advantages of valve-in-head motors over others?—Lafayette G. Guenther.

1—These cars cost about \$5,000 to \$8,000.

2—Various types and makes of plugs are used and after each race Motor Age publishes an equipment table showing the various accessories used in the prize-winning cars.

3—The motor used in the Stutz racing cars is a valve-in-the-head type, designed by Stutz engineers. The motor used in the passenger cars is a T-head, four-cylinder.

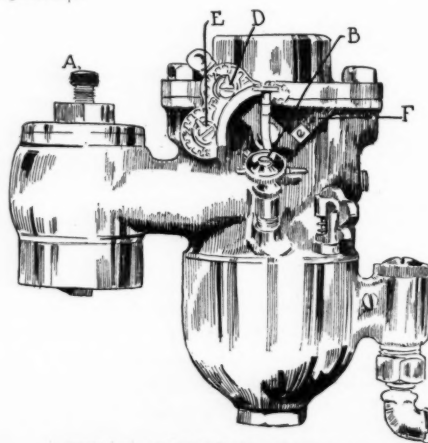


FIG. 2—SCHEBLER MODEL L

Showing adjustments for low, intermediate and high-speed

4—The Owen magnetic car is made by R. M. Owen & Co., 142nd street, New York. This car uses no clutch or gear-set of the type seen on other cars, but uses instead what is called a magnetic or electric transmission.

The system is known as the Entz and in this a generator and motor are combined in an unusual manner, as shown in Fig. 4. The casing of the generator, which carries the fields or pole pieces, is bolted to the crankshaft, replacing the flywheel. The armatures of the two machines are coupled together and their connecting shaft is permanently fastened to the drive shaft.

The speed of the car is regulated by a throttle in the customary manner, but the torque for different loads is varied by changing the field strength of the generator and on lower speeds, by sending the generated current to the motor. When the car is running along under conditions similar to high gear, for a mechanical-driven car, the generator winding is short-circuited on itself and therefore, with a slight amount of slipping the heavy current is generated. This current is of sufficient strength to create a magnetic attraction between the field and the armature equal to the torque required to propel the car at that speed.

The slippage varies with the torque, so that if a slight grade is encountered the difference will become slightly greater, thus increasing the voltage of the generator, which will, in turn, produce a stronger magnetic attraction and the torque will become greater. Seven speeds are provided.

5—The loss of heat through the cylinder walls depends to a large extent upon the wall surface area and by placing the valves in the head this surface is reduced because there are no pockets and hence there is a reduction of loss. The gases may enter and leave the combustion chamber of an average I-type cylinder faster than they can the chamber which has pockets and hence there is a gain in power. The entire combustion chamber of an I-head cylinder may be machined and thus greater accuracy is obtained as regards compression volumes of the differ-

Questions Answered and Communications Received

S. A. Pearce.....Westport, Ind.
Eugene L. Lyon.....Pelham, N. Y.
Lafayette G. Guenther...St. Louis, Mo.
A Subscriber.....Fairfax, Mo.
J. G. Randolph.....Hot Springs, Ark.
L. M. Field.....San Francisco, Cal.
Eugene Spaulding.....Abilene, Tex.
Roy Gipson.....Jefferson City, Mo.

No communications, not signed with the reader's full name and address, will be answered.

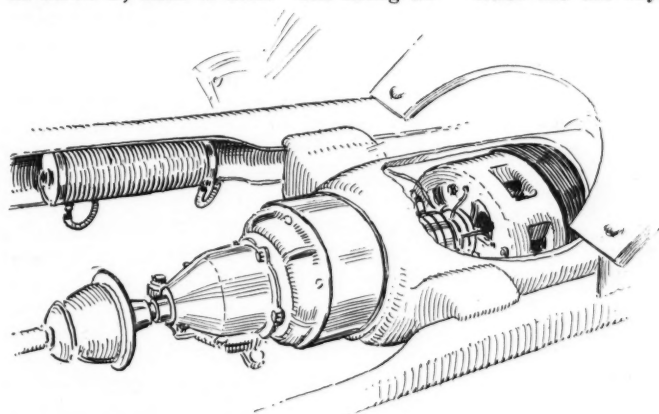
ent cylinders. The combustion chamber may be made of a shape nearly spherical and since the spherical is said to be the ideal chamber, the I-head is advantageous from this viewpoint.

MOTOR HEATS, POOR CARBURETION Other Causes of This Condition—Tuning Schebler Model L

Fairfax, Mo.—Editor Motor Age—I have a model L Schebler carburetor on a Ford run about. It is hard for me to get the right adjustment. What is the matter when it heats the engine up so much? Can Motor Age give me the adjustment for this carburetor.—A Subscriber.

The heating may be caused by other things beside poor carburetor adjustment. If you are sure it is the latter it is due to the motor getting too rich a mixture. Before touching the carburetor check up on the following, which are causes of overheating: Carbon in the cylinders, which condition usually is accompanied by misfiring and loss of power, especially on grades; valve and ignition timing faulty; overfeeding of oil, causing smoking, hence carbon depositing and heating; slipping clutch or dragging brakes; water system clogged; exhaust pipe or muffler obstructed; tight motor parts, such as pistons and bearings; running with retarded spark too long; too much low gear running, or misfiring of motor because of poor mixture.

The Schebler model L carburetor is illustrated in Fig. 2. Adjust the auxiliary air valve A, so that it seats lightly. Then close the needle valve by turning the screw B to the right as far as possible, and as soon as it meets resistance do not attempt to move it farther. When the needle is seated fully, turn it back five complete turns. Open the throttle about one-third and start the motor. Slowly close the throttle. If the motor is not running smoothly and slowly, adjust the needle valve by means of B and the throttle screw F, until it does. The idling ad-



justments now are complete. The dials D and E are the intermediate and high-speed adjustments. Adjust the pointer on the dial D about half way between 1 and 3. Advance the spark and open the throttle so that the roller on the track below the dials is in line with the dial D. If the motor back-fires turn the indicator toward 3 a little more, or perhaps toward 1. Try both and see which gives the better result.

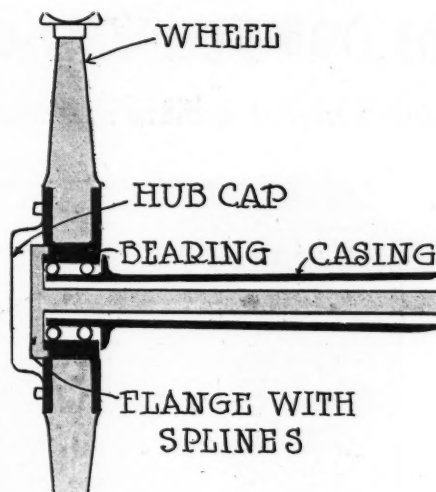


FIG. 3—A FLOATING AXLE

In this type the wheel bearings are on the outside of the housing and the shafts are flexibly fastened to the wheels

With the throttle open wide or nearly so adjust the high-speed dial E the same way as D was adjusted.

GRINDS VALVES, LOSES POWER Valve Cages Probably Reset Improperly— Carburetor May Need Adjusting

Hot Springs, Ark.—Editor Motor Age—I have a 1915 37 Buick and after grinding the valves for the first time I find that it has no more power on second than on first. Can this be due to improper adjustment of a 1915 Rayfield carburetor? If so, how may I get information as how to adjust same?

2—How may carbon be removed from my motor?

3—What is the proper oil to use for a Buick in this climate for winter? For summer?—J. G. Randolph.

1—You may have replaced the cages improperly. Also it is probable that the carburetor has been thrown out of adjustment. The adjustment of the Rayfield was given in the July 15 issue of Motor Age, on page 28.

2—The service stations in the larger cities use the oxygen method, claiming it

FIG. 4—OWEN CAR DRIVE

This is known as the Entz magnetic transmission and uses an electric generator and motor instead of the conventional clutch and gearset

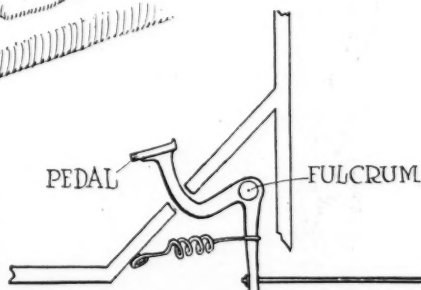


FIG. 5—ACCELERATOR PEDAL ARRANGEMENT

Simple layout for use with a Stromberg model H carburetor

is cheaper and quicker than any other. In Chicago the charge for removing carbon by this method is from 35 to 75 cents per cylinder. If you wish to do the work yourself you can scrape the carbon out quite easily after removing the valve cages. The scrapers for doing this work may be purchased at any supply store for about \$1.

3—A medium oil for the motor and a gear oil with heavy body for the gearset and rear axle should be used in summer. In winter use the same kind of oil for the motor, but use a lighter grade of gear lubricant in the cases.

DISTINGUISHING LIVE AXLE TYPES Difference Between Floating and Three-Quarter Floating Designs

San Francisco, Cal.—Editor Motor Age—Is a rear axle, whose driveshaft fastens at the wheel end with bolts through the wheel flange, classified as a floating or three-quarter floating type?

It is my understanding that the floating axle fastens at the wheel end in the hub with lugs and that the three-quarter floating fastens with bolts through the wheel flange.—L. M. Field.

The only difference between the floating and three-quarter floating axles is that the former has the shafts flexibly attached to the wheel hubs and in the latter the attachment is rigid, as with bolts running through the axle flanges. In Fig. 3 is shown a floating axle with the axle flange fitted with a jaw clutch, which rests in a corresponding clutch member in the wheel hub. Thus, after removing the hub cap the axle shaft may be withdrawn. In a three-quarter floating axle a number of bolts must first be removed so as to free the shaft flange from the wheel hub.

REMODELED ONE-LUNG CADILLAC Uses False V-Radiator and Hood and Has Covered Wood Wheels

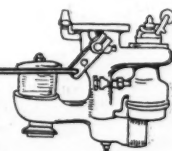
Abilene, Tex.—Editor Motor Age—The illustration in Fig. 1 shows a one-cylinder Cadillac which I redesigned. The old body, hood, fenders and tank were removed and the present hood is practically a false one built of sheet metal. The radiator is a V-type and is a dummy placed in front of the radiator supplied with the car. The visible radiator has a sufficient total opening to allow air to rush through to cool the inner radiator. The wheels are the old wooden ones covered with sheet metal to give the appearance of disk wheels.—Eugene Spaulding.

Will Install Accelerator Pedal

Jefferson City, Mo.—Editor Motor Age—I have a Lion model D touring car and have a Stromberg model H carburetor, but cannot find a way to connect foot accelerator. Will Motor Age please explain and give diagram.—Roy Gipson.

You should have no difficulty fitting an accelerator pedal with connections and the illustration in Fig. 5 may assist you in your work. The throttle arm may be set

so that the throttle opens with either a push or a pull. The return spring should not be too stiff, but just enough to bring the pedal back to closed position easily.



Enger Twin Six at \$1,095 Has Valve-in-the-Head Motor

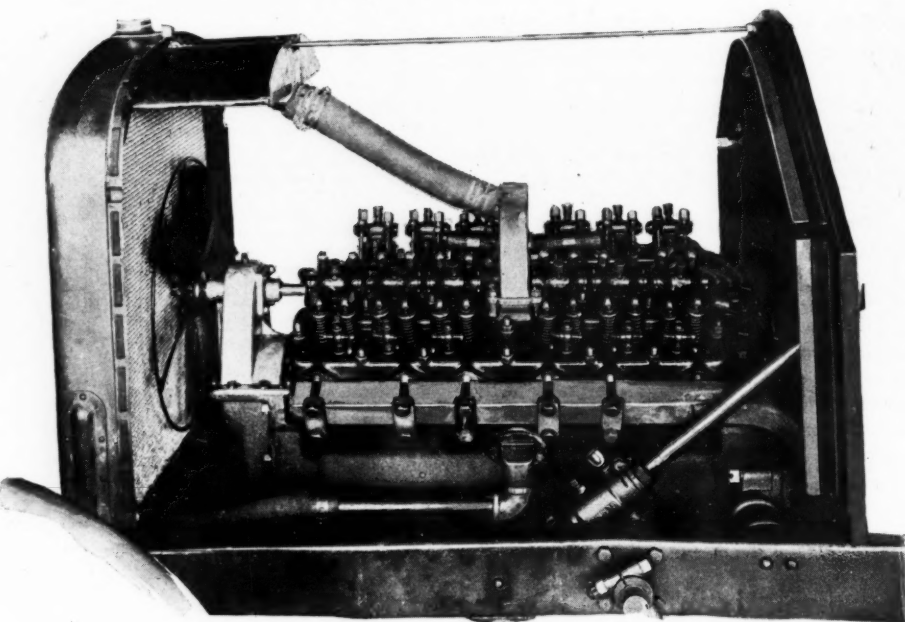
Cylinders, 2 5-8 by 3 1-2 Have Removable Heads

A QUITE unexpected announcement of a twelve-cylinder car for the medium-price class has just been made by the Enger Motor Car Co., Cincinnati, O., which is about to market a twin-six at \$1,095 with all the fitments now desired by the buyer. The Enger twelve uses a 2 $\frac{5}{8}$ by 3 $\frac{1}{2}$ motor with its cylinders cast in blocks of six, set at 60 degrees from the vertical. There is a single camshaft in the V above the crankshaft and there are twenty-four cams. The drive for this shaft is by silent chain from the crankshaft.

The valves all are set in a removable head and they are operated by vertical rods and rocker arms between the cylinder blocks. In order to free the V from complication due to accessory fitting, the exhaust manifolds are placed on the outside feeding to independent mufflers through flexible tubing. With this arrangement the valve tappet adjustment is quite easy to make and the ignition units, etc., are not hard to examine or adjust.

The carbureter is carried between the blocks and there are two outlets to feed each set of six cylinders. The inlet manifold is water jacketed and it also serves as an attachment means for the water outlet pipe.

The lubrication is by force feed using a hollow camshaft, and ignition by a battery system with the distributor mounted



ENGHER TWIN-SIX MOTOR WHICH HAS REMOVABLE HEADS AND EXHAUST MANIFOLDS ON THE OUTSIDE

in the rear and driven from the camshaft.

The clutch and gearset are made a unit with the motor and the drive to the wheels is by double-jointed shaft to a floating axle. The drive is taken through cantilever rear springs and the torque by a

separate member. The wheelbase is 115 inches and tires 32 by 4.

CARBURETER MADE IN AMERICA

New York, Aug. 20—The Longuemare carbureter which up to the present has been manufactured in France and imported here is now to have an American model, arrangements for manufacture at Syracuse, N. Y., having been completed by the Longuemare Carbureter Co., New York. Some changes have been made to suit American requirements, and other changes which are general improvements in the direction of convenience of fitting, adjusting and assembling. The water jacket, surrounds the throttle, has been dropped and the opening in the throttle valve for the idling jet has been increased to permit a longer dwell. There is no vital alteration in the operation of the carbureter. There are two jets, one for idling and the other for running, the first above the other. By more compact design the weight has been brought down on all models about 40 per cent. The connections are S. A. E. standard.

UNIONS WANT HUB SHOPS

Boston, Mass., Aug. 21—Labor officials are making a determined effort to unionize all the motor repair shops in Boston. For some time the organizers have been working quietly and they have succeeded in getting a number of places unionized. Other shops are partly so. The only demand they have made so far is for an eight-hour day. Some of the dealers have held out, however, and they intend to keep an open shop if possible.

FEATURES OF THE ENGER TWIN-SIX

Cylinders in two blocks.

Angle between cylinders, 60 degrees

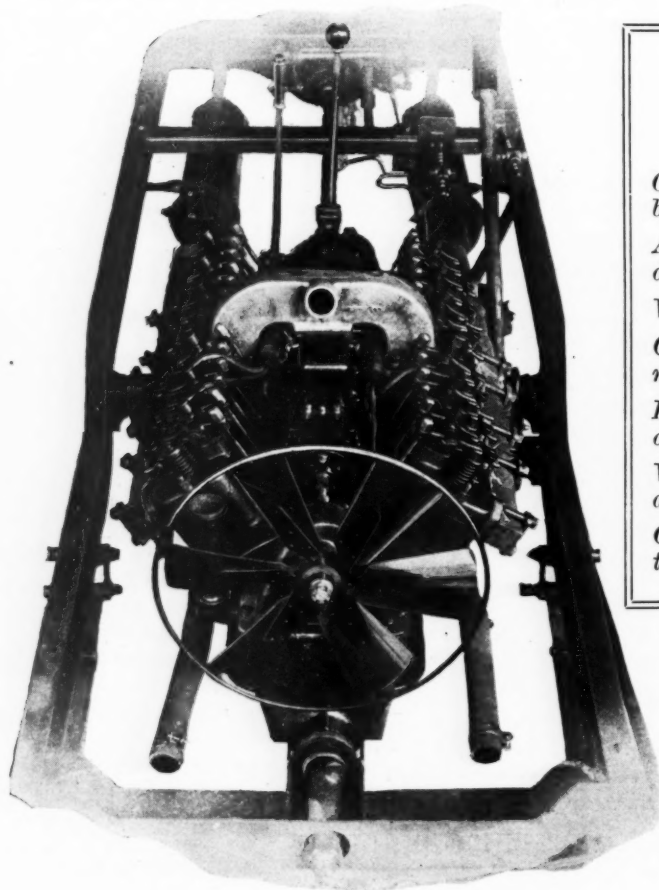
Valve in the head.

Cylinder heads removable

Exhaust manifolds on the outside

Valves easily adjustable

One camshaft with twenty-four cams

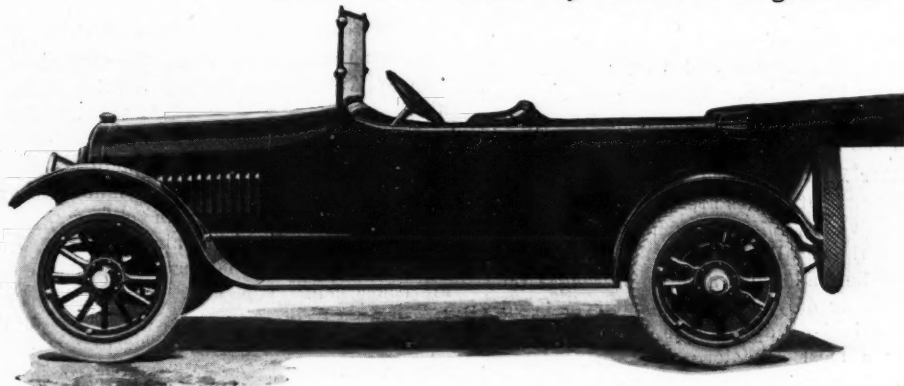


VIEW OF ENGER MOTOR

Showing the location of the water-jacketed inlet manifold, the generator and also the vertical rods and rocker arms for valve operation. There is but one camshaft used and it has twenty-four cams.

Jackson First to Announce Two Different Sized Eights

Both Have Northway Motors—Light Four Also Carried



JACKSON SMALLER EIGHT, WHICH LISTS AT \$1,195 AND HAS A 2 $\frac{7}{8}$ BY 4 $\frac{1}{4}$ NORTHWAY MOTOR. THE WHEELBASE IS 112 INCHES

THE Jackson Automobile Co., Jackson, Mich., has an ambitious program for the coming year and is the first manufacturer to announce two eights of different capacity. Both will have Northway motors, the large engine which was introduced last winter and the smaller a new motor modeled upon the same general design. In addition, there will be a light four with a high-speed type of engine and it is expected that this will be popular.

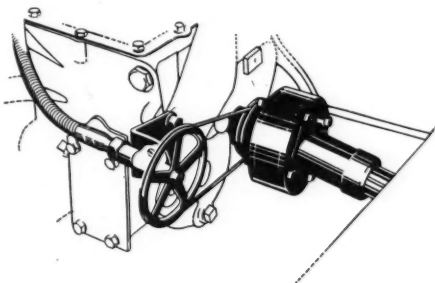
The light four is a Northway motor like the eights, having dimensions 3 $\frac{1}{2}$ by 5, and, being carefully balanced, its ability for high-speed running can be made use of freely. It is the idea of the Jackson company that there will be a large demand for a thoroughly good and well-finished four-cylinder car despite the low prices of some sixes and eights, so they are making an excellent job of their four, which is listed at \$985.

Motor Details of the Eights

The smaller of the eights has a 2 $\frac{7}{8}$ by 4 $\frac{1}{4}$ motor, or 246.7 cubic inches displacement, and the larger 3 $\frac{1}{2}$ by 4 $\frac{1}{2}$, giving it a piston displacement of 346.3 cubic inches, prices being \$1,195 for the smaller and \$1,685 for the larger car. Only the large eight has seven-passenger capacity, the other two being supplied with five-passenger touring bodies. A feature common to all three cars is high finish for the bodies and the use of good leather upholstery. Also the Jackson company is to be congratulated on having broken away from the conventional black paintwork, as the four is finished in a rich maroon tint, the small eight in dark green with natural wood wheels, and the large eight in dark blue.

On all Jackson chassis both front and rear springs are elliptic, giving an unusual amplitude of motion and ability to take really bad roads in comfort. In using springs of this kind the main difficulty is to devise a sufficiently strong attachment to the frame, as stresses that are normally taken at two points are concentrated

at one. In the photograph showing the engine of the larger eight the method of attaching the front springs is clear, the frame being pierced with holes for the spring clips, which are thus gripped to the lower flange of the side rail. At



SPEEDOMETER DRIVE ON 1916 JACKSON

the rear of the frame the other springs are attached in the same manner, except on the large eight, which has a swivel attachment. The largest car has both torque and radius rods, so as to relieve the springs of all stresses save those imposed

THE JACKSON LINE FOR 1916

Three cars, two eights and a four
Large eight, \$1,685; smaller, \$1,195

Light four has Northway, 3 $\frac{1}{2}$ by 5 motor

Propeller shaft speedometer drive

Elliptic springs all around

Better body lines

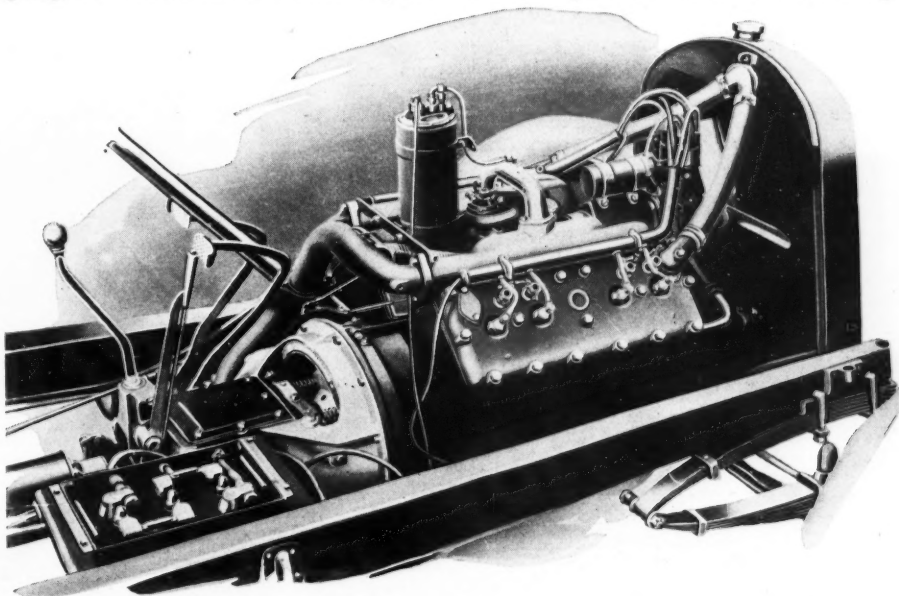
Departures from standard coloring

by the load, but the two smaller chassis have only torque stays, driving effort passing through the springs. In practice it seems that this gives a very easy and elastic drive.

Double Universal Used

Not long ago some of the Jackson cars used a single universal with the propeller shaft inclosed, but this design has now been abandoned in favor of the open shaft with a universal at each end. Telescopic motion of the drive shaft is cared for by mounting the front universal upon a large splined shaft end, which eliminates a universal combining sliding with the other motion. This makes for easy inclosure and better lubrication of the joints. The rear axles are all floating and the gear ratios on high are 4.4 to 1 on the four and little eight, and 4.25 to 1 for the large eight.

On all models the two-unit Autolite system is used, the distributor being combined with the generator. The starting motor is carried low on the crankcase side, and the generator is between the cylinders on the eights, being mounted in the usual place on the four. Fuel is sup-



INSTALLATION OF NORTHWAY EIGHT-CYLINDER MOTOR IN 1916 JACKSON

plied by a Stewart vacuum tank sucking from a rear tank.

Returning to the power plants, each of these includes a cone clutch with external springs and a three-speed gearset. Both the eights are of the same sort of design, having the crankcase divided vertically, the cylinder blocks being cast integral with half the case. The large motor is practically unchanged since the Northway company first introduced it early in the present year and the small one is different only by the fact that it has a two-bearing crankshaft, instead of the three-bearings used for the larger engine. Both have pressure lubrication of a most complete kind and a single camshaft with sixteen cams. The same style of forked connecting rod is used for both motors, this having proved satisfactory in the large number of Northway eights that have been put in the hands of users during the last 6 months. The cylinder heads are detachable, which makes a light task of the occasional necessity for cleaning out carbon and the spark plugs are located centrally, which is usually assumed to be the most efficient position.

The Jackson company makes a feature of its wide steering lock, which makes the car convenient to handle in cities or in exceptionally rough country. To enable the fullest value of this to be obtained, the wheelbases have been kept fairly short, that of the four and small eight being 112 inches and that of the large eight 124 inches. Tires are 32 by 4 all around on the smaller cars and 34 by 4½ on the big eight.

Other Bodies Offered

Runabout bodies are supplied, instead of the five-passenger equipment, on the four and the small eight, but the large eight will be made with a seven-passenger touring body only. The runabout type is very good in both appearance and comfort and has a most capacious rear storage space, which always is useful for touring. It should be remembered that the company also can provide its special transcontinental body, in which the seat back of the front compartment can be let down and a comfortable bed made with the upholstery and cushions. This body has met with considerable success since its introduction a few months ago.

A four-bearing crankshaft with bearings of 2 inches diameter is used and this should make for smooth running by eliminating shaft whipping.

SERVICE MANAGERS ORGANIZE

Indianapolis, Ind., Aug. 23—Organization of Automobile Factory Service Managers of Indiana was perfected at the Servin Hotel recently. The object of the association is to improve and facilitate co-operation between motor car manufacturers, dealers and owners in obtaining a maximum of service in a fair and business-like manner to the mutual advantage of all concerned. The principal means for this purpose will be the holding of meetings for the reading and discussion of papers and reports on the various service problems common to motor car manufacturers and by social intercourse among the members.

A feature of the organization is that those interested in the service end of accessory and parts manufactures, who have establishments in this state, will be eligible to membership as well as the factory men. In this way it is hoped that a closer co-operation of all concerned will result.

H. W. Drew, Nordyke & Marmon Co., was elected president; E. W. Cotton of the McFarlan Motor Car Co., Connerville, Ind., vice president, W. D. Smith, service manager, Cole Motor Car Co., secretary-treasurer.

Wisconsin Has New Four-Cylinder

Made in Two Sizes, 4 by 6 and 4 1-4 by 6

A NEW four-cylinder, L-head motor with either 4¼ by 6 or 4 by 6 cylinders, is announced by the Wisconsin Motor Mfg. Co., Milwaukee, Wis., under the model number of T-U. This new design has block-cast cylinders mounted on an aluminum crankcase, uses three-point suspension and is designed to accommodate any standard type of ignition, starting and lighting apparatus. The cylinder blocks are interchangeable on the one crankcase.

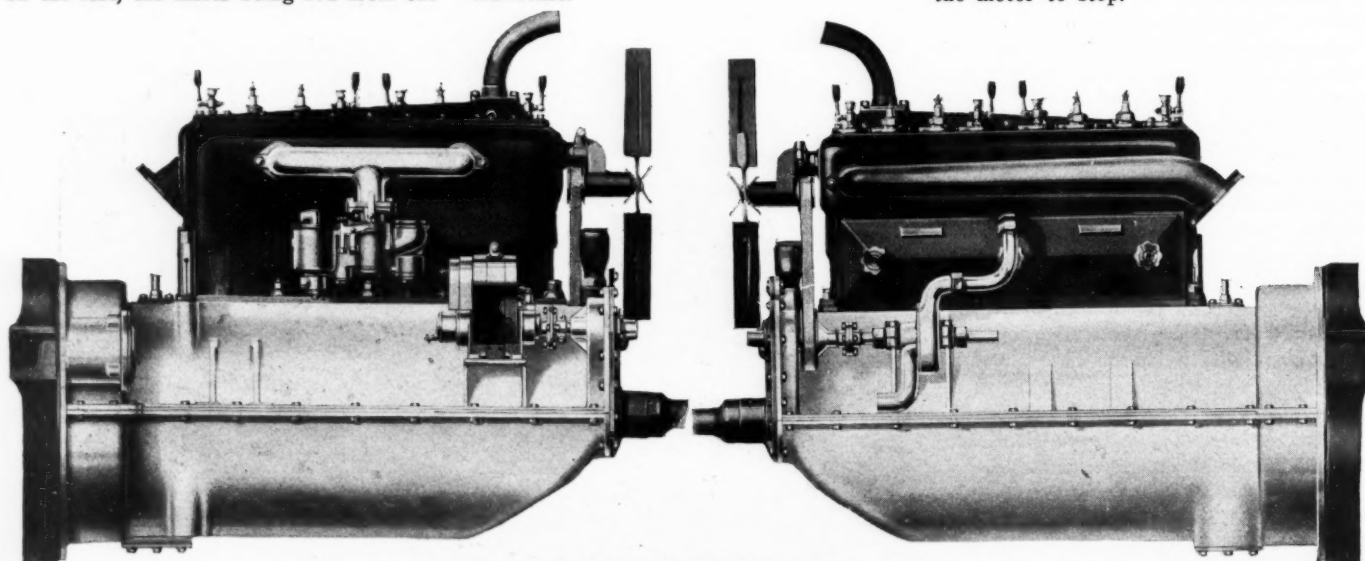
The valves are of tungsten steel and are on the left, the inlets being fed from the

carburetor on the right. There is a regular form of two-arm manifold attached to the cylinder casting, but the mixture is carried over through cored passages. When magneto ignition is desired, the instrument may be driven from the timing gears on the carburetor side as shown herewith.

Cooling is by pump on the left, and lubrication by force feed and splash, the crankshaft being drilled to allow oil to make its way to the rod bearings. The pump for oil distribution is within the crankcase.

THOUSAND MILES ON LOW GEAR

Walla Walla, Wash., Aug. 20—One thousand miles of driving on low gear was completed at San Francisco recently. The type of car used was a series VIII Franklin. The start was made from Walla Walla August 1 and finished in San Francisco the following Wednesday. John McCormach, the Walla Walla dealer, and two passengers, formed the crew. The entire trip was made without permitting the motor to stop.



WISCONSIN'S NEW FOUR-CYLINDER BLOCK MOTOR

This is made with either 4 by 6 or 4¼ by 6 cylinders, the blocks being interchangeable on the same crankcase. The crankshaft has four bearings

Paterson Six at \$995 Carried With the Four for 1916

Former Has Standard Units Mounted in 117-Inch Chassis

THE W. A. Paterson Co., Flint, Mich., has brought out a new six at \$985 and will continue its four-cylinder practically unchanged for the 1916 season, the only alterations being in the body which has lines more in accordance with modern streamline ideas.

The six uses a Continental $3\frac{1}{4}$ by $4\frac{1}{2}$ motor and the seven-passenger body has ample internal space and good finish. Wheelbase is 117 inches, tires 32 by 4, and the equipment is extensive. One little detail of the latter, especially worthy of mention, is the utilization of the left side front door pocket for tools most frequently needed. On lifting the flap of the door the most important tools are found, arranged each in a separate leather container so that any one required can be picked out quickly.

The motor has an A. L. A. M. rating of 25.4 horsepower and a piston displacement of 224 cubic inches. It is the type of Continental with a detachable cylinder head and the crankcase cast integral with the cylinder block; it is known as the Continental light six and was described fully on page 49 of Motor Age for July 1.

There are three main bearings, each being supplied with oil by pressure from the plunger pump which is driven from the camshaft and located on the crankcase side. An oil lead also goes to the helical timing gears, and there are dip troughs for the connecting rods.

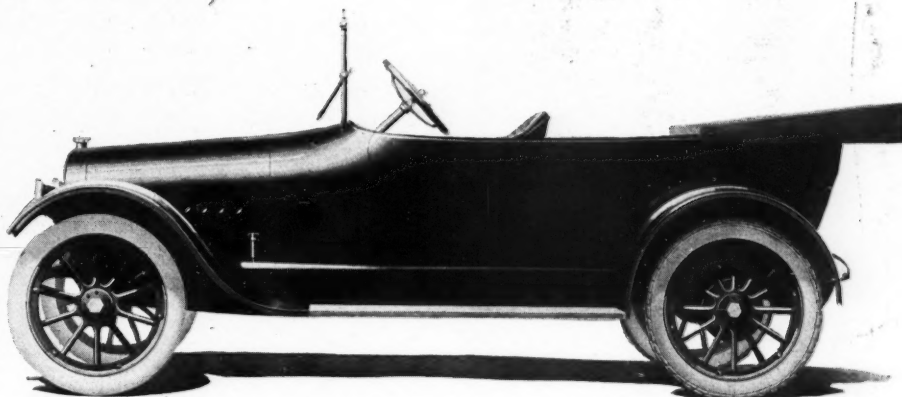
Valve Accessibility Easy

The left side of the engine is clean save for the Stromberg carbureter and the oil filler, while the water pump and the generator are arranged on the right in such a manner as to interfere as little as possible with the valve accessibility.

Not long ago attention was called to the prevalence of heavy pressures needed for the operation of clutch and brake pedals on many cars. This important point has not been neglected in designing the Paterson, with the result that the effort needed to release the clutch or to apply the service brake is amazingly small. The clutch itself is a cone type with leather face and the Warner gearset in unit, provides the usual three forward speeds.

From the gearbox there is a single-jointed shaft with its one universal designed to take the torque stress. That is to say the torque tube terminates at a bearing on the drive shaft just behind the universal, so the tube withstands the stress of torsion at the point where it is greatest, near the axle, and only transfers the stress to the drive shaft close up to the universal end where the stress is at its lowest.

For the rear axle a built-up construction is used, the differential and drive gears being mounted upon New Departure bear-



PATERSON SIX, WHICH SELLS FOR \$985 AND USES A $3\frac{1}{4}$ BY $4\frac{1}{2}$ CONTINENTAL MOTOR

ings, while Hyatt bearings take care of the support of the wheels and the drive shafts. These shafts can be removed easily and the differential taken out through the rear part of the housing, without removing the axle from the springs. The brake system generally is laid out thoughtfully and a notable point is the use of long equalizer bars which can be relied upon to apply a really equal pull to each brake arm.

In the body, width of seat is the outstanding characteristic, this being above the average, and the upholstery is deep both as to the seat cushions and the backs. The folding seats disappear into the rear of the front seats. Externally the body is free from breaks in line or from projections of any sort and the color is a blue-black with the chassis and metal parts in full black.

It is not quite certain at the time of writing, which of two electrical systems will be employed, but in either case there will be two units the generator having the ignition distributor integral.

AIR SPRING COMPANY FORMED

Bradford, Pa., Aug. 23—Articles of incorporation of the Bradford Air Spring Co. have been applied for. This company has been building and testing on a small scale for the last 3 years, and now will start producing on a larger order. The directors of the company are J. A. Fraunheim, W. W. Hughes and F. M. Nash, the offices being located in the Schonblom building at Main and Kennedy streets.

The company controls several patents on pneumatic springs for vehicles. The spring itself is automatic. The air is pumped into the cylinder by the motion of the car, and as each spring is individual, three of the wheels may ride on the road and only one be raised when the car comes in contact with an impediment. The individuality of each spring permits of uneven distribution of the load in a car without affecting the level position of the body.

In addition to the plant of the Bradford company, the shops of Bovaird & Co. will be utilized for the present.

308,213 FORD CAR CHECKS

Detroit, Mich., Aug. 24—From Detroit a flood of wealth—more than \$15,000,000—is being distributed to United States folk by the Ford Motor Co. It is not the award of \$50 rebate checks to each 1915 purchaser of the familiar little motor cars that is bothering the Ford officials. It is the clerical work of printing, drawing, signing, recording and mailing the 308,213 pieces of welcome paper that has turned the big Ford general offices topsy-turvy for the last 3 weeks.

August 1 was the date fixed for the big distribution of the checks, and as early as a month ago preparations were made to put them in the hands of the car owners. To do this expeditiously more than 300,000 envelopes were printed, of the open-face variety, of a special size to handle the checks. The checks were lithographed in a special size also to permit of a telautographic device to be used in signing them. Night after night a train of check bearing trucks comes up to the postoffice portico.

ELECTRIC GARAGE BODY FORMED

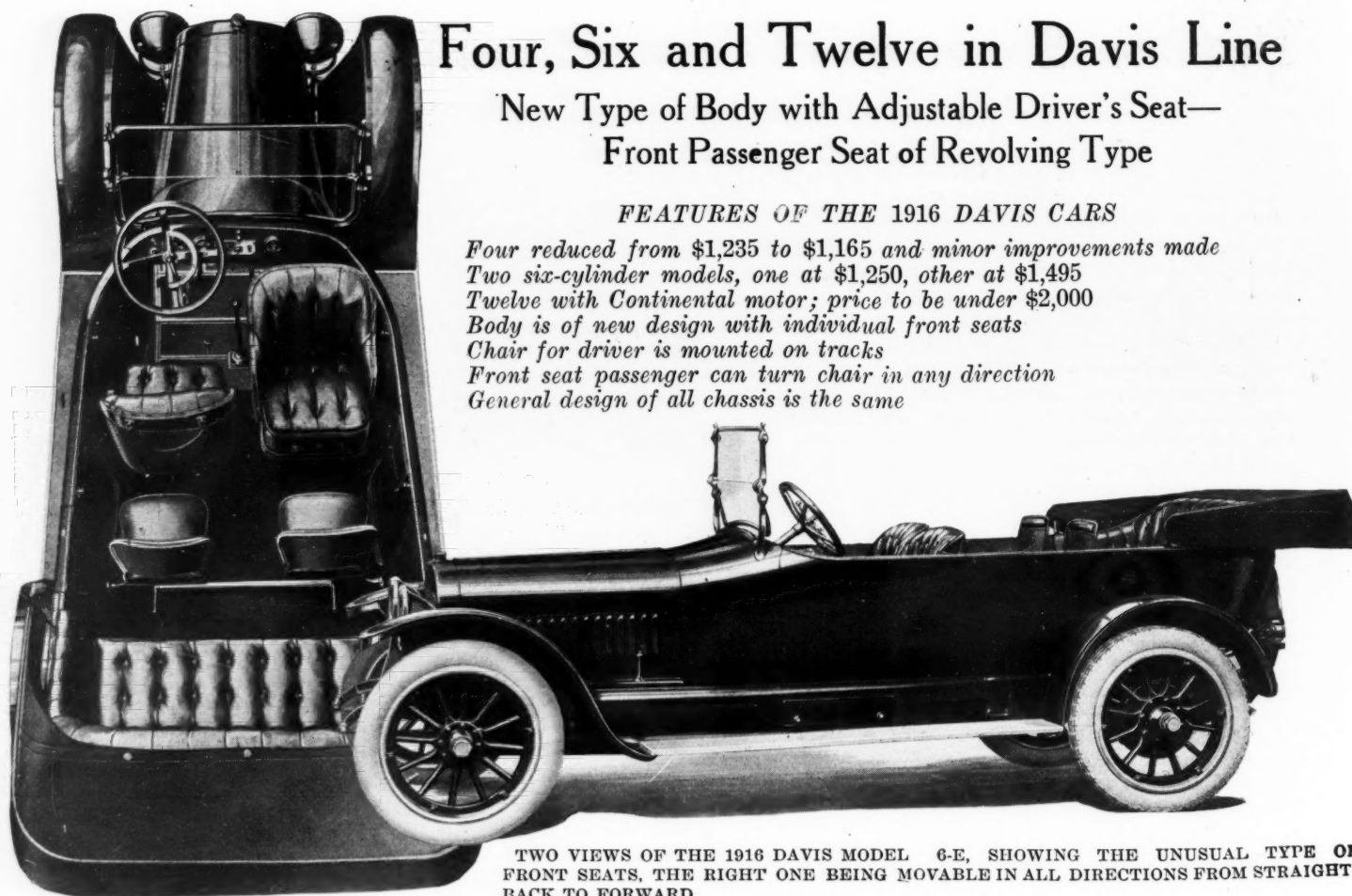
Chicago, Aug. 21—A new association, known as the Electric Garage and Dealers' Association, was formed here recently when twenty-three garagemen, battery men, vehicle dealers, etc., met at the Metropole hotel. While the new association will have as its prime object the betterment of the electric vehicle industry, this is being done by co-operative work with the Chicago Garage Owners' Association, with which the new association is affiliated. In brief, the newly-formed organization is a division of the Garage Owners' Association, so that the latter now contains four divisions as follows: Gasoline car garagemen, accessory dealers, liverymen and electric vehicle dealers and garagemen.

Four, Six and Twelve in Davis Line

New Type of Body with Adjustable Driver's Seat—
Front Passenger Seat of Revolving Type

FEATURES OF THE 1916 DAVIS CARS

Four reduced from \$1,235 to \$1,165 and minor improvements made
Two six-cylinder models, one at \$1,250, other at \$1,495
Twelve with Continental motor; price to be under \$2,000
Body is of new design with individual front seats
Chair for driver is mounted on tracks
Front seat passenger can turn chair in any direction
General design of all chassis is the same



TWO VIEWS OF THE 1916 DAVIS MODEL 6-E, SHOWING THE UNUSUAL TYPE OF FRONT SEATS, THE RIGHT ONE BEING MOVABLE IN ALL DIRECTIONS FROM STRAIGHT BACK TO FORWARD

AS in the past season, the George W. Davis Motor Car Co., Richmond, Ind., will market a line of cars made of standard units, but for 1916 the bodies are entirely new on all models and one of them, the four-cylinder, has received slight changes otherwise, and a price reduction of \$70, making it \$1,165. The model, 6-50, which was listed at \$2,150, has been discontinued. The 1916 line consists of the improved four, a five-passenger six at \$1,250, a seven-passenger at \$1,495, and a twelve in the same chassis at a price under \$2,000 but as yet undecided.

Chassis Are Alike in Design

All Davis cars are alike, insofar as the make and design of their component parts are concerned, the motors being Continentals; the clutches and gearsets, Warner-Muncie; axles, Weston-Mott; universals, Hartford; steering, Warner, etc. The differences lie mainly in the dimensions. The \$1,250 six has a 120-inch wheelbase, 34 by 4 tires and a 3¼ by 4½ motor, while the larger six has a 3½ by 5 motor, 124-inch wheelbase and 34 by 4½ tires.

The improvements in the four-cylinder model consist of the adoption of Delco cranking, lighting and ignition instead of that used previously, the shifting of the fuel tank from under the seat to the rear and the fitting of a Stewart vacuum gasoline tank, a new windshield and top, a new rear axle and body. The wheelbase is 112 and tires 34 by 4.

It is in the Davis bodies that a departure has been made from ordinary practice. The front seats now are divided and both seats are movable, that for the driver being mounted on a track, so that the seat may be slid back and forth to meet the driver's needs, and that of the passenger is mounted on a revolving base. This makes a most convenient arrangement, for the front seat passenger may turn his seat in any direction from straight forward to backward.

Bodies Are Roomier

The bodies are roomier than those of 1915, have better lines and use metal moulding instead of wood. The doors are flush and now are hinged at the forward end. A new Neverleek top with Handy curtains, made by the Davis company, are used.

The five-passenger six uses the new model 7W Continental motor, which was described in Motor Age a few times within the past four weeks in connection with other cars using it. The motor accessories are a Stromberg model HB carbureter, Delco electrical apparatus and Stewart fuel feed. The power plant uses a cone clutch and three-speed gearset driving shaft, with Hartford joints to a floating axle.

The larger six has exactly the same design of units but uses the 6N Continental motor and running gear parts of larger size and greater strength.

The twelve-cylinder model will be exactly like the large six except, of course, for the motor, which will be a Continental 3 by 4 with valves in the head. Details of this motor have not yet been made known but in a general way it was described in the Pathfinder story which appeared in Motor Age in a past issue.

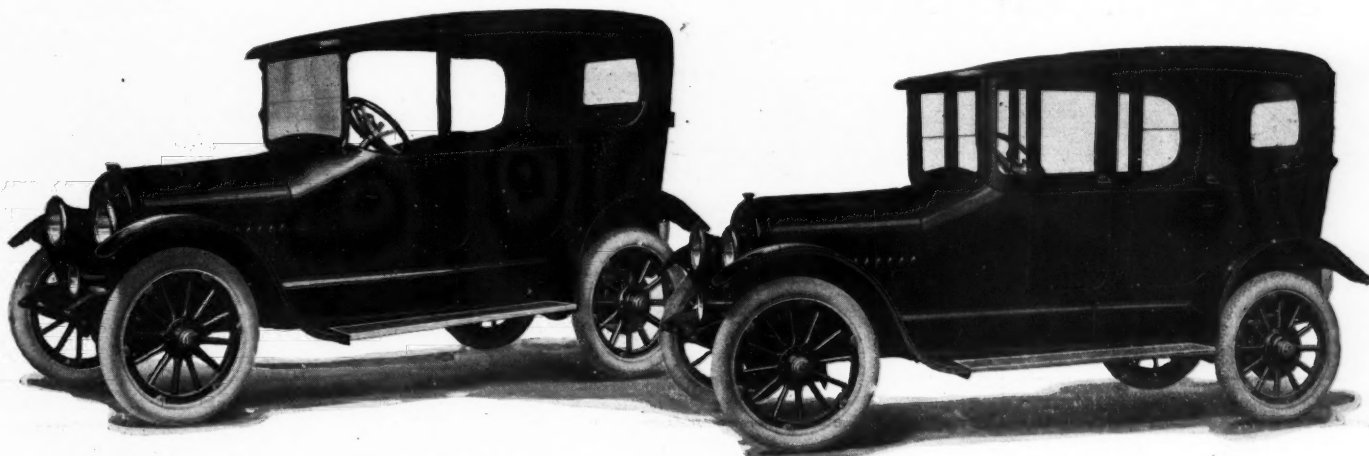
MINNEAPOLIS IN SPEED CRUSADE

Minneapolis, Minn., Aug. 23—Following a series of accidents and deaths in July a clearing house for complaints against violation of traffic ordinances by motor car drivers was formed by the Minneapolis Civic & Commerce Association. Some of the drivers who caused deaths were indicted by the grand jury, which conferred with Mayor W. G. Nye on stricter enforcement of the ordinances. Three drivers were sentenced to the workhouse for reckless speed and nine jitney drivers were fined or imprisoned.

Five complaints were received by the bureau in the first hour. The association sent out investigators. Twenty complaints were received the second day. Passing street cars while standing at street intersections, overtaking and passing street cars on the left side of the street, speeding, driving without lights, stopping on left side of street were chief complaints. At the end of the second week none had been killed and accidents were cut to less than one a day.

Rex Sedan Top a New Type Used by King Company

Combines Advantages of Closed and Open Cars



REX SEDAN BODY WITH SIDES REMOVED, MAKING THE CAR AN OPEN ONE

REX BODY INSTALLED, CONVERTING AN OPEN CAR TO A SEDAN

THE large number of convertible bodies which have been introduced during the past 12 months shows that there is a strong tendency to replace the ordinary top by something which gives a better combination of the advantages of closed or open bodywork. One of the latest attempts to solve the problem is the Rex sedan top, made by the Rex Buggy Co., Connersville, Ind., and this has been taken up by the King Motor Co., Detroit, Mich.

To accommodate this top the body is made to an ordinary open design and top irons are attached at the usual places, but instead of using the ordinary iron a socket is fixed securely to the main body frame, showing a threaded hole starting flush with the face of the panel when the body is completed. There are four of these sockets and the irons for carrying the or- secured to the upper extremities of the

How the Top is Fitted

To fix the Rex top the ordinary irons are unscrewed and four others put in their place; these providing four vertical studs on which the Rex top is set and held down by nuts. This gives a right attachment for the rear part, and the front end is

secured to the upper extremities of the windshield irons.

The main frame of the Rex is hardwood, well strengthened at the joints and comprises the leather and Pantasote roof with the back piece and a post located just aft of the tonneau doors on each side. In this condition the body is just as much open as with an ordinary top and no side curtains.

Protection Against Draughts

The rear windows are held in frames which can easily be put in place and fixed by screws, this protecting the tonneau seat from side draughts. To attach the door windows a few screws are run vertically into sockets on the top edges of the doors and into the body side piece between the doors, the parts to which the windows hinge being also attached to the roof frame. An ingenious dodge is the use of thin pressed-metal troughs which connect the bottom edge of each window piece with the top edge of each door. As the windows and doors swing on different hinges a gap opens between the two as the door is opened and there is risk of pinching a finger between the two when closing the door again. The metal trough closes this

crack and removes the danger while also assisting to keep out driving rain.

All around the top is a narrow flap which covers the junction and closes any crack, while the weight rests on felt pads which prevent injury to the paint. Inside the finish is in cloth or Bedford cord. To give ventilation the tonneau windows are divided and the top half can be lowered instantly.

When the body is fitted the car becomes truly a sedan and there is no part which is flimsy or rattlesome. Also the attachment is not a large undertaking for in an ordinary way two men working leisurely could remove the folding top and replace it by the Rex in less than 1 hour.

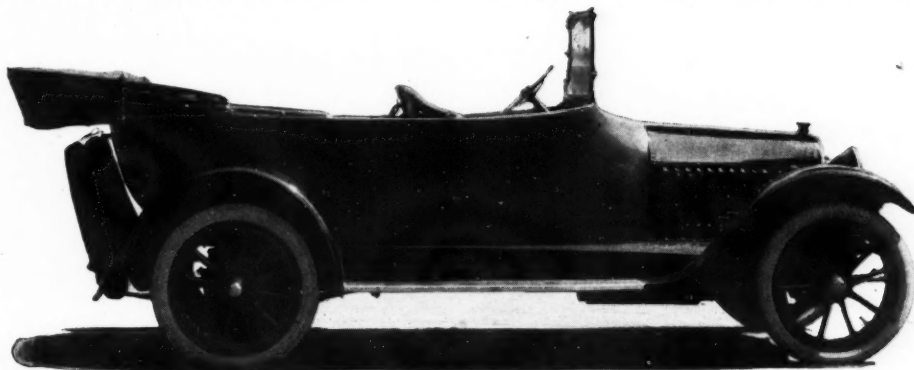
The King company has arranged with the makers of the top to supply King dealers at a special price and it is understood that the top is attachable to any model D touring car. The weight is stated to be about 175 pounds or about 100 pounds more than a folding top.

HALLADAY LIGHT SIX FOR 1916

Streator, Ill., Aug. 23—The Barley Mfg. Co. is ready with its 1916 line of Halladay cars, which consists of two sixes, one at \$2,285, called model 0 and a new light six, model 40, at \$1,385.

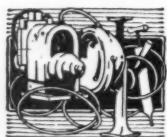
The latter is a well-rounded out five-passenger, streamline design, with individual front seats. The motor is a Rutenber, 3 by 5 with the cylinders and upper half of crankcase cast on unit. There is a removable cylinder head. Carburetion is by a new Stromberg mounted on the left and feeding through cored passages. On the right is a Westinghouse combination generator and ignition unit. The starting motor also is a Westinghouse.

The clutch is a disk type in unit with a three-speed gearset and the drive is double-jointed shaft to a floating axle. The wheelbase is 122 inches and tires 34 by 4.



SEVEN-PASSENGER 1916 CHALMERS 6-40

This model, the photograph of which was not ready for use with the description in the July 22 issue of Motor Age, is like the five-passenger with the exception of the rear suspension, which is semi-elliptic instead of cantilever as in the five-passenger



The Accessory Corner

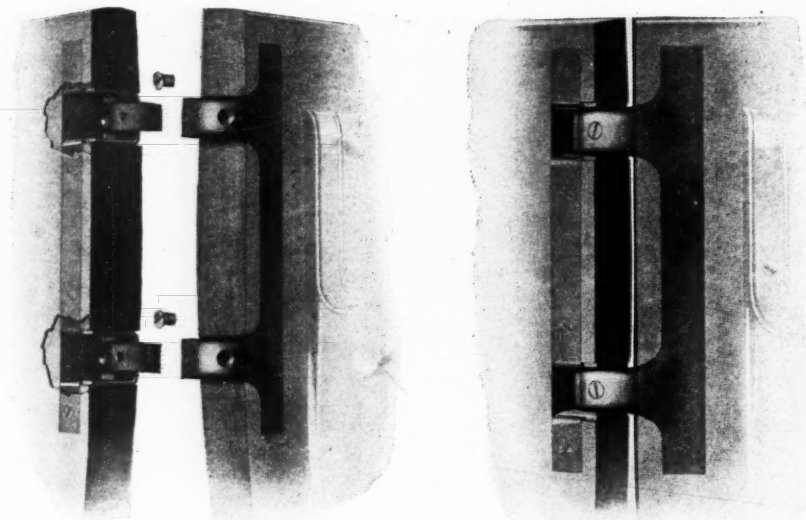


FIG. 1—G, P & F CONCEALED DOOR HINGE

This hinge is made of pressed-steel and is said to have the advantage of being self aligning

Boko Bucket

THE Defiance Welding Co., Defiance, O., has brought out a folding bucket which is made of waterproof and gasoline proof fabric and holds 2 gallons. A feature is a long tube attached to the bottom, the tube being used as a sort of funnel for filling the radiator or gasoline tank. When folded, it is $\frac{3}{4}$ inch by 10 inches. Price is \$1.25.

Rex Reflector

A reflector which, when installed in a headlight, is said to produce an efficient light without glare is the Rex, made by the Rex Pipe Bending Co., 315 North Wood street, Chicago. The Rex reflector depends for its action upon two things, the shape of the rear and the surface of the inside. The latter is etched, except

for a small portion back of the bulb, which is polished. Also the reflector has a slight flat spot behind the bulb. These two things are said to prevent the bulb light from being given off as blinding rays.



FIG. 2—POLSON BLOWOUT PATCH

Completely encircles the inner tube and is held in place by a self-adjusting strap

The Rex, shown in Fig. 5, is made of aluminum and sells for \$2.50 per pair for the 6 and 7 inch, and \$2.75 for the 8 and 9 inch. Attachment may be made to any

ordinary headlight in a very short time, it is said.

Pittsburgh Searchlight

The Pittsburgh Electric Specialties Co., Pittsburgh, Pa., is offering a searchlight which may be removed from its regular position on the windshield, and used as a trouble lamp on the road or in the garage. The searchlight has universal movement and employs an 8-inch parabolic reflector and powerful focusing lens. It is stated the lamp consumes but 1 ampere, thus allowing it to be operated satisfactorily with almost any lighting system. The bulb is a 6-volt Mazda. The Pittsburgh is shown in Fig. 5.

Polson Blowout Patch

A new inside blowout patch has been introduced by the Polson Rubber Co., Kansas City, Mo. This patch completely encircles the inner tube and is held in place by a self-adjusting strap fastener. It is stated by the maker that when air is pumped into the tube the patch expands at the ends and tightens in the middle, this action preventing pouching and so making the hole in the casing larger. The Polson is made of white fabric, the ends being rubber to guard against pinching. The length is 10 inches. Price is 80 cents for the 3 inch, 90 cents for the 3½ inch, \$1 for the 4 inch, and \$1.20 for the 4½ inch. It is illustrated in Fig. 2.

Ideal Private Garage Fuel System

A gasoline storage system for private garages is being marketed by the Kupferle Bros. Mfg. Co., St. Louis, Mo., as one of the many such outfits in its line. The one shown in Fig. 7 is one especially suitable for the private owner and measures gallons only. The tank is made of galvanized iron with welded seams. This outfit has the features which the owner will appreciate, these being in the form

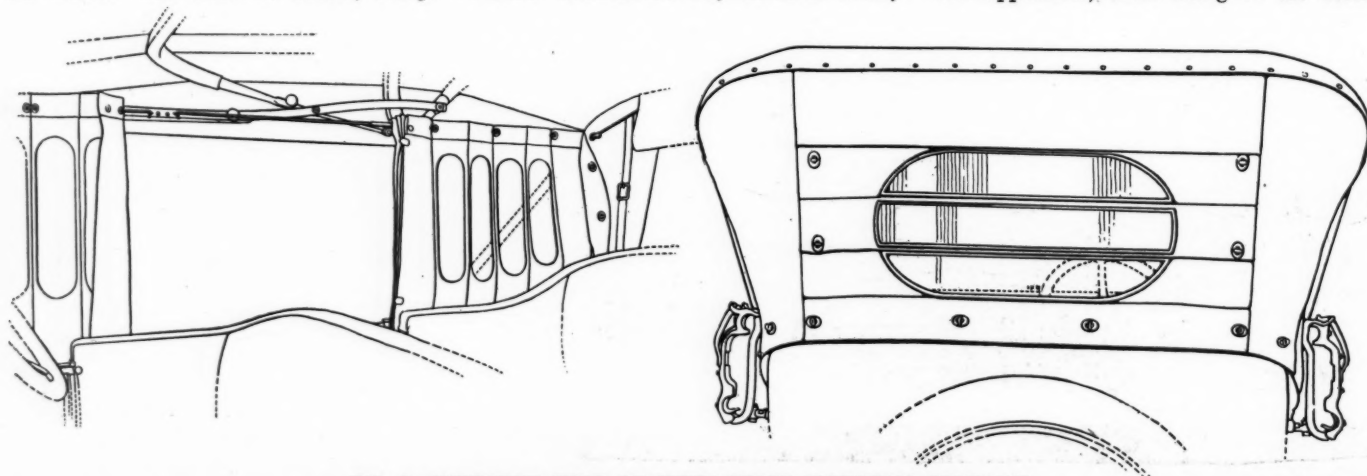


FIG. 3—IMPROVED TYPE OF JIFFY QUICK-ADJUSTING CURTAINS

These curtains, made by the Jiffy Auto Curtain Co., Detroit, Mich., now are made with collapsible rod instead of cable supports, thus permitting of more rapid fitting and preventing binding. Notice that the celluloid windows are horizontal instead of vertical strips. This allows of the curtain being folded without injuring the celluloid



FIG. 4—PREST-O-LITE COOKING OUTFIT

Uses a Prest-O-Lite gas tank with a burner fitting attached so that light may be had while the stove is in use. The stove when turned on full uses about $3\frac{1}{2}$ cubic feet of gas per hour

of such fittings as a discharge register and an anti-drip nozzle, which cuts off the flow when the pumping ceases. All types and sizes of pumps and tanks are offered for both public and private garages.

G. P. & F. Muffler

A muffler, which weighs only 5 pounds, has 471 cubic inches volume and is said to offer exceptionally free passage for the gases and still reduce noise to a marked degree, is the G. P. & F., made by the Geuder, Paeschke & Frey Co. This muffler, shown in Fig. 6, is composed of a series of chambers made by cup-shaped units called ejectors, which are drilled with holes. It is stated that in two of these chambers a vacuum is created and this causes the gases to be pulled out much faster than in an ordinary muffler. The muffler is made entirely of steel, the seam being spot welded. The cup-shaped portions are welded in place, thus doing away with bolts or rivets.

This concern also is marketing a concealed door hinge, shown in Fig. 1. This is of the duplex pattern and is said to be self-aligning. It is made of pressed-steel and can be used on either right or left side.

Prest-O-Lite Cooking Outfit

A compact, convenient cooking outfit, which uses Prest-O-Lite gas for operation, is announced by the Prest-O-Lite Co., Indianapolis, Ind. This outfit consists of a tank and a stove with the proper fittings to receive a hose, also a fitting to the tank by means of which a light may be had. The latter fitting is in the form of an upright tube, with a jet at the end and the construction is such that the light may

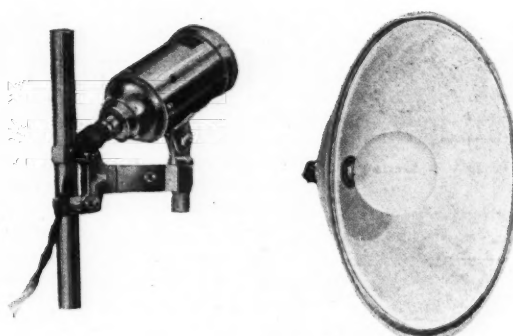


FIG. 5—TWO LIGHTING FITMENTS
Left, Pittsburgh searchlight which may be attached to the windshield or door. Right, Rear Reflector which is made of aluminum and has the greater portion of its inner surface etched

be used even though the stove is not in use. This is accomplished by the use of an extra valve near a two-way valve, thus allowing the feed to the stove to be shut off while the feed to the jet is free. The cost of operation of this outfit is from 8 to 15 cents per hour, depending upon the size of the flames used. When turned on full, the stove consumes about $3\frac{1}{2}$ cubic feet of gas per hour. The weight of the stove is 6 pounds and when packed it occupies a space 8 by 8 by 5 inches. Price is \$4.50 for the stove

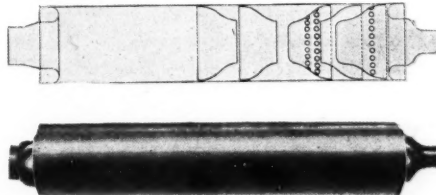


FIG. 6—G, P & F MUFFLER

Consists of a number of cup-shaped units called ejectors which form expansion chambers

with 6 feet of cloth-covered rubber hose. **Jensen Tire Pump**

A hand tire pump with an unusually long leverage, thus making pumping easy, is the Jensen, made by the W. H. Howell Co., Geneva, Ill. The Jensen, shown in Fig. 7, is of the type using a fulcrumed lever for operation, but a feature is that the whole may be folded up so as to fit any tool box. The exceptionally long leverage

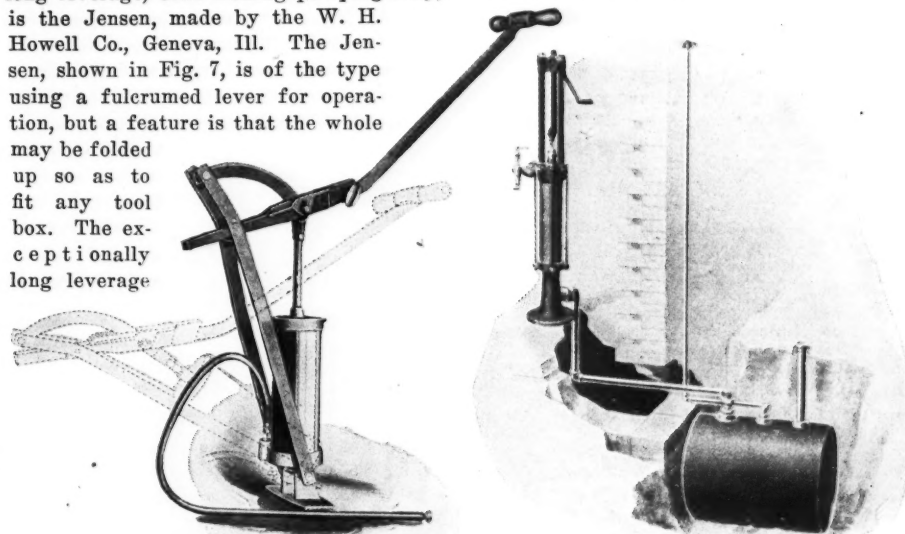


FIG. 7—TWO ACCESSORIES FOR THE PRIVATE OWNER

Left, Jensen tire pump, which is of the hand-operated type but the leverage obtained in operation is so greater, it is claimed, that the work of pumping is a matter of but a few minutes. Right, Ideal private garage gasoline storage system

obtainable with this arrangement makes pumping tires quite easy.

Auxiliary Seat for Fords

A new auxiliary seat for Ford cars is being offered by the McKinnon Dash Co., Buffalo, N. Y.

This new seat rests on the door-sill and is held in place by hooking over the top of the door. The weight, however, does not come on the door. The passenger using it sits sideways in the car.

The frame is made of round steel electrically welded, and is so designed that the door of the car cannot open when the seat is in place. It is finished in Japan, with a padded leather seat, the hook being wrapped with the same material, so as to overcome any possibility of marring the door. Price is \$1.50.

New Apco Valve Grinder

A valve grinder, with which the correct amount of pressure is provided by the tool itself, has been brought out by the Auto Parts Co., Providence, R. I. The Apco tool is provided with a universal which cares for any variation from vertical when rotating it. The grinder has a corrugated top, affording a firm grip, and can be easily rotated by the fingers. The tool is finished in black enamel and retails at 20 cents.

The Apco door anti-rattler, another device this concern markets, is designed for Ford bodies having noisy doors. The device is a spring steel construction, which is attached to the body section of the hinge by one of the wood screws of the hinge. It can be fitted in less than 30 seconds with a screw driver. It retails at 20 cents.

J-M Narco Tire-Cut Filler

This tire-cut filler made by the H. W. Johns-Manville Co., New York, is designed for sealing up little cuts and scratches in tire casings which would otherwise be enlarged by sand and stone particles. The filler comes in small tubes at 50 cents and in larger ones at \$1.

From the Four Winds



INDIANAPOLIS TRAFFIC BLOCK SIGNAL

SEMAPHORE Directs New York Traffic—New York's latest solution of street traffic problems is the semaphore system. The semaphores have been placed at the more prominent street intersections. The regular traffic policeman operates the semaphore by hand.

Dayton Adopts Semaphore—Dayton, O., has adopted the semaphore to use at busy street intersections to handle traffic. The plan is meeting with success. The device used is similar to that used by Indianapolis, shown on this page.

35,000 Cars Owned in Detroit—A canvass of Detroit to learn the number of motor cars owned by residents of that city reveals the fact that the total is over 35,000. It is estimated that by the end of 1916 Detroit citizens will own nearly 50,000 cars.

Mirage Lures Tourists to Death—A trio of tourists—James H. Roche and John S. Walsh, attorneys, and James B. Clark, all of Los Angeles, Cal.,—in attempting to cross the Imperial valley to El Centro met disaster while in the middle of the desert. The radiator of their car became dry and Roche and Walsh started for what they believed to be a body of water, which afterwards proved to be a mirage. Clark waited considerable time and when the two did not return made his way to Mineral Springs where he was resuscitated, and organized a rescue party. They found Roche unconscious and Walsh dead. Roche claimed to have avoided death by drinking lubricating oil.

THREE-YEAR Sentence for Stealing Car—A sentence of 3 years in the state reformatory was meted out to Lester Lawrence, Milwaukee, Wis., for stealing a motor car.

Twenty-six Persons Per Car—With a population of 625,000, North Dakota with its 23,175 motor cars has one car to every twenty-six persons. The registrations up to July 31, this year, were 6,433 in excess of the entire number registered in 1914.

Fining by Mail Prohibited—The practice of fining tourists by mail in Maryland has been stopped by the motor vehicle commissioner, who found that tourists who had exceeded the speed limit set by town officials in Galena and Church Hill had been notified by mail that they must pay a fine.

Device Warns of Excessive Speed—George W. Edgar, Seattle, Wash., has perfected a bell device for attachment to motor cars, that can be set automatically to sound a warning when the vehicle exceeds the limit allowed by law. It is operated by a gear attached to the speedometer sprocket and can be regulated to ring at any speed.

Woman Finds Her Sphere—Woman's sphere in business at Springfield, Mo., has taken on the sale of motor cars. Two women are agents for cars there and are making a success of their new occupations. Mrs. Benjamin Wells is agent for the Detroit electric and Mrs. F. Hall McLaughlin represents the Milburn light electric in that city.

Motorists' Lost and Found Bureau—The Automobile Legal Association, Boston, Mass., has established a plan for recovering articles from motor cars. Each week the association prints a list of articles lost and found by its members and in this way is recovering many articles for members that otherwise would never find their way back to their owners.

Makes Eight-Cylinder Ford—Battle & Hubbard, Dallas, Tex., have exercised their ingenuity and reconstructed a Ford, putting it in the eight-cylinder class. Outside of a special ignition system nothing went into the car except regular equipment. The Ford crankshafts are placed at right angles to each other, flanged together, and the ignition is said to be perfect.

The Show Circuit



Montreal Motor Show—An announcement is made by the Montreal Automobile Trade Association that the annual motor show will be held some time during the latter part of January next year. A meeting will be held in the near future when the matter will be fully discussed and the exact date announced. The question of making some substantial concession to exhibitors with a view of relieving the trade of some portion of the burden of show expense also will be given consideration.

Omaha Motor Show—A meeting of the Omaha Automobile Association was held August 18 to discuss the next motor car show. The only action that resulted was a resolution to call the attention of the National Automobile Chamber of Commerce to the fact that in previous years Omaha exhibitors have had to show models that had been selling 8 months when holding their event in February. The national body is asked to call a meeting of manufacturers to determine whether new models shall be put out in August or later in the year.

Dallas, Tex., Show—The Dallas motor show to be held in connection with the Texas state fair, beginning October 16, will have a larger representation of motor car dealers than it has had in previous years. The exhibit will continue for 2 weeks, and promises to be a representative showing.



NEW YORK'S TRAFFIC SEMAPHORE

Traffic Police Use Block System—Traffic on Indianapolis streets now is handled like railway trains—by the block system. By turning the block the corner policeman starts or stops vehicles without the customary whistle signal. At night colored electric lights take the place of the printed sign.

Maryland Passenger Cars Increase—That passenger cars are on the increase in Maryland is shown by figures just compiled under the direction of the motor vehicle commissioner of that state. During the first 7 months of 1915 licenses were granted for more cars than the entire registration of 1914, or 22,505 as compared with 18,269 for last year.

Penalty for Glaring Lights—Springfield, Mo., has passed an ordinance providing a fine of from \$1 to \$100, or jail sentence of from 5 to 60 days, or both, for using glaring headlights. Incorporated in the ordinance is a clause that prohibits the use of a revolving searchlight such as is now seen on many cars throughout the country.

Phonograph Records Gear Noise—Several cars, some new, some old, were selected by the Pierce-Arrow Motor Car Co., Buffalo, N. Y., for the purpose of making phonographic records of the timing-gear noises made by each with motors running at various speeds. Observers were then asked to classify the cars according to the noise produced by the phonograph. Much diversity of opinion resulted, from which it is evident

that the personal feature in the selection of quiet cars is almost, if not quite, worthless. It even is debatable whether the whole question is not one of psychology in which the nervous system of the observer largely enters making his selection still more unreliable.

Anti-Glare Ordinance Brings Arrests—One hundred arrests of motor car drivers and owners in a few minutes one evening last week at St. Louis, Mo., was the result of the putting into effect the new anti-glare ordinance.

Good Roads Activities

Florida Building Brick Roads—Within the next 2 years approximately 1,200 miles of brick highway, now under construction in Florida, will have been completed. About twenty counties in Florida have banded themselves together and will expend from \$10,000,000 to \$12,000,000 for good roads. This will give tourists the advantage of excellent motor trips in the winter.

Ten Thousand Men Build Roads—Ten thousand volunteer workers recently engaged in the construction of an interstate highway between Paducah, Ky., and Memphis, Tenn., with the result that after 1 day's work most of the important details over the 150 miles were completed. Congressmen, judges, city and county officials all along the highway were among the most active workers.

Organize to Build Highway—Citizens of Fort Scott, Kan., have organized a movement to establish a rock highway across Kansas. According to present plans the road will extend to the Missouri state line adjoining Bourbon county, to the Colorado line at Coolidge, passing through Yates Center, Eureka, El Dorado and Wichita. Convict labor may be employed to construct the road.

Mark C. K. C. & G. Highway—The Chicago, Kansas City and Gulf highway has been marked from Iowa City to Chicago, the section from Iowa City to Kansas City, having been marked some time ago. The marking was done by Robert N. Carson, president of the Iowa division of this highway and J. N. Weidenfeller, vice-president of the association. The marking to Chicago was finished August 14.

Convict Road Work Shows Economy—The question as to whether convict road work pays has been solved by figures compiled in West Virginia which show earnings of 25 per cent over contractors' bids. It is said that the continuance of convict road work in most of the states would depend upon its economic value and the National Committee on Prisons and Prison Labor has been investigating this phase of the convict road question.

American-Canadian Highway Link—Except for 8 miles the highway connecting the American and Canadian head of the lakes near Duluth, Minn., has been completed. For 3 years the project has engaged the attention of car owners in Duluth, Fort Williams and Port Arthur. The route will be formally opened next season. The fund for building this road was derived from a \$5,000,000 grant for the purpose of building colonization roads in New Ontario. Its length is 300 miles.

Civic Body Compiles Road Data—Tourists passing through South Bend, Ind., may get all the information necessary as to roads out of that city in any direction by calling at the office of the chamber of commerce. H. G. Spaulding, secretary of the chamber of commerce, has made a special effort to secure all necessary information as to the condition of the roads thereabouts and has it tabulated for the tourist seeking information.

May Reroute Burlington Way—Jacksonville, Ill., landed the 1916 convention of the Burlington Way Good Roads Association at the Burlington meeting, and also grabbed

many of the new officers. W. J. Brady was chosen president and Carl Weber, secretary-treasurer, both are residents of Jacksonville. No interest in the association was displayed by towns between Rushville and Fort Madison and this may mean a re-routing of the trail via Hamilton and Keokuk. An extension of the trail to Minneapolis and St. Paul was considered. A meeting will be held September 11 to consider an extension to Cedar Rapids.

Work on Ozark Trail—More than 200 men—doctors, lawyers and bankers included—and 100 women August 11 donated their services to the county and improved 4 miles of the proposed Ozark trail near Cabool, Mo. By securing the right of way through a field the public spirited workers took a 3½-mile bend out of the road. Similar good work was done at Mountain Grove, Mansfield, Seymour, Diggins, Fordland, Rogersville and a score of other towns near Cabool.

Ozark Trails to Elect—A meeting of the officers of the Ozark Trails Association will be held at Monte Ne, Ark., September 1 to elect a successor to W. H. Harvey as president of the association. Mr. Harvey has resigned. He appointed William H. Seed, of Nevada, as his personal representative to boost the trails work and good roads

Coming Motor Events

CONTESTS

August 27-28—Track meet, Pittsburgh, Pa.
 *August 28—100-mile track race, Kalamazoo, Mich.
 September 3—Track meet, Arden, Pa.
 September 4—Track meet, Youngstown, O.
 *September 4—Speedway races, Minneapolis, Minn.
 September 8-11—Track meet, Hamline, Minn.
 September 11—Track meet, Burlington, Ia.
 September 11—Track meet, Erie, Pa.
 September 14—Track meet, Punxsutawney, Pa.
 September 18—Track meet, Butler, Pa.
 *September 18—Speedway races, Providence, R. I.
 September 24-25—Track meet, Grand Rapids, Mich.
 October 1-2—Track meet, Trenton, N. J.
 *October 2—Speedway races, New York.
 *October 2—100-mile track races, Fresno, Cal.
 October 9—100-mile Invitation Race, Indianapolis, Ind.
 October 9—100-mile track race, Mattoon, Ill.
 October 16—Speedway races, Chicago.
 November 15-20—El Paso-Phoenix road race.

*Sanctioned by A. A. A.

SHOWS

August 26-September 1—Ventura, Cal., show.
 August 30-September 4—Columbus, O., show.
 September 6-10—Wheeling, W. Va., show.
 September 6-10—Indianapolis, Ind., show.
 September 6-15—Detroit, Mich., show.
 September 13-17—Milwaukee, Wis., show.
 September 18-25—Los Angeles, Cal., show.
 September 27-October 10—Denver, Colo., show.
 October 2-9—Cincinnati, O., show.
 October 4-9—St. Louis, Mo., show.
 October 6-16—New York, electrical show.
 October 16-22—Montreal show.
 November 1-3—Pasadena, Cal., show.
 January 1-8—New York show.
 January 22-29—Chicago show.
 January 29-February 5—Minneapolis show.
 March 4-11—Boston show.

CONVENTIONS

September 20-25—International Engineering Congress.
 September 24—Indianapolis, Ind., S. A. E. meeting.
 October 4-6—Columbus, O., Garage Owners' Convention.
 October 14—Chicago, S. A. E. Standards Committee meeting.
 October 17-18—Cleveland, O., Electric Vehicle Association of America.

propaganda generally in behalf of the association.

Marking Egyptian Trail—County vice-presidents of the Egyptian Trail Association have begun the marking of the Egyptian trail which runs the full length of Illinois, from Chicago to Cairo. The route follows the Illinois Central tracks and the sign is a black pyramid on a band of yellow, below which are the letters, "E. T." The Cairo Automobile Club, Cairo, Ill., is financing the marking.

Clubs and Associations

Garage Association to Meet—The Columbus Garage Owners' Association, Columbus, O., has arranged for a state convention at Columbus, October 4, 5 and 6, and has invited 2,000 garage owners in the state to attend.

Tulsa Association Reorganized—The Tulsa Automobile Association has been re-organized and made an active auxiliary of the Tulsa Chamber of Commerce. There are 2,500 motor car owners in the county in which Tulsa is located, many of whom are joining the association.

Nashville Automobile Club Organized—The Nashville Automobile Club has been organized and articles of incorporation have been filed. Meetings will be held temporarily at the Nashville Commercial Club and permanent quarters will be opened in the near future. It is the intention of the club to log all the roads of the south.

Form Motor Club—After considerable agitation and work on the part of the charter members, the Delaware Automobile Club, Delaware, O., has been organized. L. C. Riddle is president. A membership campaign is on and among the first things the club hopes to do is establish safety zones for corners.

Muncie, Ind., Organizes Club—At a meeting held in Muncie, Ind., last week, the Delaware County Motor Club was formed. Prominent Indianapolis business men, actively connected with the Hoosier Motor Club and the state organization attended and assisted with the organization. E. B. Prowdfoot was elected secretary and treasurer.

Club Plans Publicity Measure—The Hoosier State Automobile Association will use the state fair to be held at Indianapolis, Ind., September 6 to 11, as a means of getting the organization before the motor car men of the state. The motor car show at the fair will be the avenue of organization. The Hoosier state body and its pioneer sponsor, the Hoosier Motor Club will have a booth at the fair.

Nebraska Association Elects—At the fifth annual meeting of the Nebraska State Automobile Association held at Beatrice, Neb., August 16, it elected J. C. Moore, Tecumseh, president; Guy T. Walling, David City, first vice-president; James Brooks, Stanton, second vice-president; Dr. A. P. Overgaard, Omaha, secretary, and J. C. Wheaton, Beatrice, treasurer. The next annual meeting will be held at Fremont, Neb.

Club Members to Get Blue Book—Members of the Toledo Automobile Club, Toledo, O., who are in good standing, will get a copy of the 1916 Blue Book, Volume 4, when it is ready for distribution. The club recently closed a contract with the Automobile Blue Book Publishing Co. whereby the volume to be given to members will have a special Toledo insert, giving detailed information as to the best roads within a radius of 60 miles from Toledo, together with pilot maps. The volume will carry the emblem of the club on the front cover and the name of the owner embossed thereon.



Among the Makers and Dealers



AUTO Parts Has No Branches—The Auto Parts Co., Chicago, announces that it has no branch houses and is not affiliated with any firm in the United States using this name.

Mohawk Rubber Adds—Plant additions to cost upwards of \$5,000 are planned by the Mohawk Rubber Co., Akron, Ohio.

Buys Interest in Northwest Motor—P. D. Stubbs, formerly assistant sales manager for the Hudson Motor Car Co., has purchased an interest in the Northwest Motor Co., Seattle, distributor of Hudson and Packard cars in western Washington.

Maxwell Branch at Portland—The Maxwell Motor Co. has established a branch in Portland, Ore., to serve the northwest, with W. J. La Casse, formerly in the motor car field in California, as manager. The Portland house will carry a large stock of parts.

Standard Welding Plant Enlarged—The Standard Welding Co., Cleveland, O., has under construction several large additions to its plant which when completed will give the company space equivalent to three large city blocks. Other additions are planned for the future.

Wilson Truck Factory Opened—After 2 years spent in experimental work, the J. C. Wilson Co., Detroit, Mich., has opened a plant and is ready to begin manufacturing the Wilson 2-ton truck on a large scale. The plant will contain 50,000 square feet of floor space.

Rose Now Chalmers Distributor—L. H. Rose, formerly coast representative for the Studebaker, Maxwell and Lozier factories, has re-entered the motor car field after a lapse of several months taking charge of the northern California distribution of the Chalmers with headquarters in San Francisco.

McKenzie Goes to Coast—L. E. McKenzie, formerly in charge of the Studebaker interests in the Pittsburgh district, has been appointed assistant manager of the Seattle branch of the Studebaker Corp., succeeding Clete Mulick, who goes to the San Francisco branch of the same company.

Packard Plant Additions—The Packard Motor Car Co., Detroit, Mich., has found it necessary considerably to extend its plant. Additions are now under way, comprising nearly 400,000 square feet of floor space, being almost completed. Buildings under construction by the Packard company will

cost approximately \$750,000 and bring the total floor space of the plant to 48 acres.

Studebaker Opens Factory Branch—The Studebaker Corp. has opened a factory branch at Worcester, Mass., with George Eastman in charge. A service station will be opened later.

Brainard Hydraulic Pressed Steel Engineer—George C. Brainard, formerly assistant sales manager of the Hydraulic Pressed Steel Co., Cleveland, O., has been made chief engineer of that concern.

Dallas Qualitytyre Company Organized—The Dallas Qualitytyre Co. has been organized at Dallas, Tex. Lamonte Daniels is president, F. L. Shaw, vice-president. The latter is in charge. The company will handle accessories in addition to tires.

Ford Manager Now Distributor—P. R. Hough, formerly assistant manager of the Ford Motor Co.'s branch assembling plant at Denver, Colo., has gone into partnership with Harry E. Maines, Chevrolet and Monroe distributor in Denver, under the name of the Maines-Hough Motor Co.

O'Brien Company Maxwell Distributor—The Fred P. O'Brien Co., Indianapolis, Ind., has closed a deal with the Maxwell Motors Co., Detroit, Mich., whereby the former will take over the distribution of Maxwells in the Indianapolis territory.

Hughes Falcon Chief Engineer—W. S. Hughes has been appointed chief engineer of the Falcon Motor Truck Co., Detroit, Mich. During the last 5 years Mr. Hughes has been connected with Findelsen & Kropf Mfg. Co., Chicago, manufacturer of Rayfield carbureters—the last 2 years at the Detroit branch of the latter concern.

Reorganized Concern Takes Hup and Saxon—The old Higgins Motor Sales Co., Indianapolis, Ind., has been reorganized, now being known as the Higgins-Sutherland Motor Co., R. L. Sutherland being part owner. Mr. Sutherland has been the Studebaker representative in that territory for a number of years. The new concern will handle the Hupmobile and Saxon.

Axle Company Changes Name—The Yuster Axle Co., Cleveland, O., has changed its name to the Columbia Axle Co. The withdrawal of M. L. Yuster from the organization and the acquisition of the machinery, equipment, etc., of the Torbensen Gear & Axle Co., Newark, N. J., is responsible for

the change in title. The combined product of both companies in future will be manufactured under one management.

McClurg Coshocton Plant Assured—A contract has been signed by J. S. McClurg, representing the McClurg Rubber Co., and the Coshocton Chamber of Commerce, Coshocton, O., which insures the opening of the plant in the near future.

Davias Manages Sun Sales—Charles H. Davias, formerly distributor for the Haynes in Ohio, with headquarters at Columbus, has been made district sales manager of the Sun Motor Car Co., for Ohio and Pennsylvania.

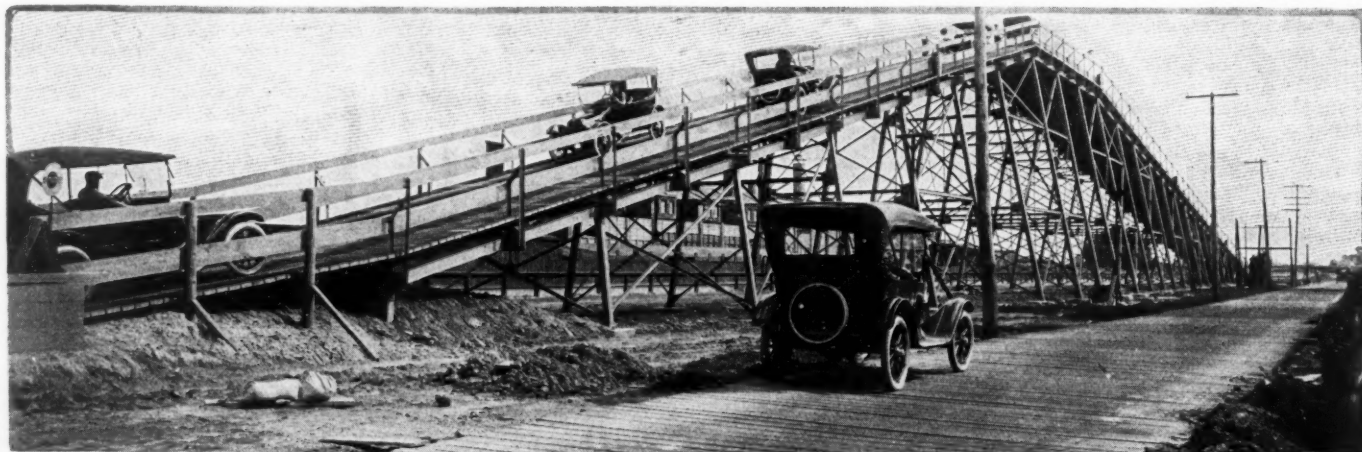
Switch Lock Company Receiver—Judge Saer in the United States district court at Columbus, O., has appointed Hugh Dugan receiver for the Auto Combination Switch Lock Co., upon the application of several creditors, who claim the company is insolvent.

McNaull Tire to Add—Plans are being drawn for a large addition to the plant of the McNaull Tire Co., Toledo, O., to be used as a mill room. Much new machinery will be installed and the output of the plant increased four-fold. Extensions also are being made in the vulcanizing plant.

American Hard Rubber May Move—The American Hard Rubber Co., Akron, O., the plant of which now is completely surrounded by the buildings of the B. F. Goodrich Co., probably will move to a new location, giving up its present location for the expansion of the Goodrich company. While the report can not be verified, it is believed officials of the two concerns have reached an agreement.

Cole Engineer Now Detroit—C. S. Crawford, chief engineer for the Cole Motor Car Co., Indianapolis, Ind., has become a Detroit, owing to the fact that the largest part of the materials and accessories used by the Cole company come from the Michigan metropolis. The move was made in order to have Mr. Crawford in closer touch with concerns furnishing component parts of the Cole car.

Newtype Spotlights Tested—In a recent test given Newtype spotlights, made by the Wood Mfg. Co., Fairfield, Conn., they furnished light for the parade at the opening of a fair held in Fairfield. Twenty of them were used, furnishing collectively over 500,000 candlepower. In a concentration test



TEST HILL AND SPEEDWAY USED TO TRY OUT CARS AT THE DODGE BROS.' FACTORY, DETROIT, MICH.

one of these spotlights lighted by current from a Ford magneto ignited a cigaret held directly in front of the lamp in less than 30 seconds.

Hamilton-Beach to Add—The Hamilton-Beach Co., Racine, Wis., manufacturing small electrical appliances of all kinds, is about to erect a new factory.

Spencer Goes to Kansas City—Detroit has lost one of its motor car fraternity in the promotion of E. V. Spencer, formerly in charge of sales for the Studebaker Corp., at Detroit, to the position of assistant manager of the Kansas City branch of that company.

Paine Resigns from Maxwell—W. D. Paine, Philadelphia, Pa., has resigned as supervisor of sales of the Maxwell Motor Co., to take up the sales managership of the Detroit Commercial Car Co., Detroit, Mich., which is at present making a light four-cylinder delivery wagon.

Test Hill for Dodge—The Dodge Bros. have completed a half-mile speedway, a test hill and a sandpit on the factory grounds at Detroit for testing Dodge cars. Every day some 200 mechanics may be found working at top speed on the banked speedway, struggling through the deep sand in the center of the track, or climbing the steeply-graded test hill, in an effort to find flaws in their various mounts. The illustration on the opposite page shows this novel testing grounds.

Conrad Joins Sphinx—H. W. Conrad, formerly sales manager of the Pullman Car Co., York, Pa., has been appointed sales manager of the Sphinx Motor Car Co., in York.

Lucas Moves Factory—The Lucas Electrical Device Co. has moved its factory to Lagrange, Ind. The company's name was given as the Lucas Mfg. Co. in the July 29 issue of Motor Age.

Federal Rubber Employees Get Outing—The annual picnic and outing given employees of the Federal Rubber Mfg. Co., Milwaukee, Wis., August 21, at Waukesha beach, was attended by 8,215 persons. Eighty-two interurban cars were required to carry the crowd.

Fisk Branch at Billings—The Fisk Tire Co., Chicopee Falls, Mass., has established a factory branch at Billings, Mont. The increased demand for tires due to the opening of Yellowstone park to motor cars made the step necessary. W. H. Johnston is in charge.

Haynes Company to Add—The Haynes Automobile Co., Kokomo, Ind., will spend \$250,000 enlarging its plant with a four-story machine shop, a three-story paint shop and a large testing plant. It also will expend \$75,000 for new machinery. The new buildings will be of steel construction and brick.

They will increase the floor space of the plant about 150,000 square feet and will enable the company practically to double the output of cars.

Holton Farmack Sales Manager—Hoover Holton, heretofore with the sales department of the Briggs-Detroit Co., Detroit, Mich., has been made general sales manager of the Farmack Motor Co., Chicago.

Building Montana's Largest Garage—A garage which will be the largest in the state of Montana will be occupied when completed by the F. B. Connelly Co., Billings, Mont., distributor of Ford and Overland cars. This company recently placed an order for 800 cars which is said to be the largest single order ever given a factory from Montana.

Case Will Pension Employees—The J. I. Case Threshing Machine Co., Racine, Wis., employing between 4,000 and 5,000 operatives, has announced the inauguration of a pension system for its employees. All employees will be entitled to a pension at the age of 65, if retiring, and the retirement on pension becomes compulsory at the age of 70 years. The pension will be based on the annual wage at 1 per cent per year employed, with a \$50 per month maximum and an \$18 minimum. Twenty men have been retired so far since July 1.

Albany, N. Y.—National Automobile Club Corporation; capital stock \$10,000; incorporators, C. W. Fisher, C. A. Montague and A. B. Todhunter.

Amarillo, Tex.—Western Motor Co.; capital stock \$1,000; incorporators, C. H. Dixon, W. L. Fore and C. C. Chenoweth.

Belleville, Ont.—Belleville Jitneys; to operate a jitney service in Belleville; capital stock \$40,000; incorporators, S. E. Carman, S. R. Burrows and C. R. Burrows.

Brooklyn, N. Y.—Big Four Garage; capital stock \$2,000; incorporators, Ralph Wolf, Aaron Wolf and Max Weinstein.

Cleveland, O.—Victor Motor Car Co.; to deal in motor cars; capital stock \$12,000; incorporators, A. F. Reed, C. M. White, V. C. Snyder, J. K. Lee and A. V. Curtiss.

Dayton, O.—Two-In-One Tire Co.; to deal in motor car tires; capital stock \$10,000; incorporators, George Inman, B. W. Marsh, T. J. Curran, W. E. Schaeffer and A. F. Smith.

Delaware, Md.—Motor Device Co.; to manufacture devices and fittings for motor cars, etc.; capital stock \$500,000.

Denison, Tex.—Denison Motor Car Co.; capital stock \$2,500; incorporators, B. S. Benedict, Frank Platter and W. W. Langford.

Denver, Colo.—Hupp Motor Sales Co.; to deal in motor cars; capital stock \$60,000; incorporators, W. R. Woods, P. E. Chamberlain and F. E. Simonton.

Dover, Del.—Centaur Rubber & Tire Co.; capital stock \$500,000.

Dover, Del.—Co-operative Automobile Sales & Supply Co.; capital stock \$100,000.

Dover, Del.—Eastern Motors Corporation; to manufacture motor cars; capital stock \$150,000.

Dover, Del.—New Orleans Motor Speedway Association; capital stock \$1,000,000.

Dover, Del.—Perfection Tire Sales Co.; to deal in accessories; capital stock \$1,000,000.

Dover, Del.—Victor Car Co.; capital stock \$100,000.

Dover, Del.—Wright Motor Car Co.; to manufacture motor cars; capital stock \$300,000.

Elma, N. Y.—Philip Jerge & Sons; garage; capital stock \$20,000; incorporators, Philip Jerge, Jacob J. Jerge and Edward C. Jerge.

Hamilton, Ont.—East End Garage Co.; to deal in motor cars, equipment and accessories; capital stock \$40,000; incorporators, F. A. Robertson, C. R. Robertson and G. S. Dunkin.

Haverhill, Mass.—Doucette Automobile Ambulance Service; capital stock \$10,000; incorporators, Paul Boulanger, Nory Doucette and M. Doucette.

Recent Incorporations

Jersey City, N. J.—Baldwin Garage Co.; to deal in motor cars, etc.; capital stock \$125,000.

Katonah, N. Y.—Blue Book Garage; capital stock \$6,000; incorporators, S. H. and L. J. Hayes and J. A. Boreley.

Malden, Mass.—Stratton Manuel Garage; capital stock \$50,000.

Mankato, Minn.—Dillner & Holbrook Co.; capital stock \$25,000; incorporators, E. T. Dillner, C. R. Holbrook and Iney Dresden Dillner.

Montreal, Que.—Montreal Motors; capital stock \$75,000.

Mt. Vernon, N. Y.—Dewey's Garage; capital stock \$5,000; incorporators, Hannah Dewey, Frank E. Dewey and J. A. MacCracken.

Newark, N. J.—Public Service Tire & Rubber Co.; to manufacture tires, rubber goods, etc.; capital stock \$125,000.

Newark, N. J.—Service Truck Co.; to deal in motor cars, etc.; capital stock \$25,000.

Newport, Mich.—Francisco-Martin Motor Car Co.; capital stock \$30,000.

New York—Bergen Carburetor Co.; capital stock \$2,000; incorporators, M. E. Harby, William A. Watson and A. S. Bergen.

New York—Godsol Traders Corporation; to deal in motor trucks; capital stock \$25,000; incorporators, Charles Attinger, Abraham Goldberg and Louis Rosett.

New York—Hunt's Point Garage Co.; capital stock \$5,000; incorporators, George Lodes, Anna Lauter and Augustus Lauter.

New York—Peugeot Automobile Racing Co.; capital stock \$500; incorporators, Leon Mintz, Arthur J. Hill and William Thierfelder.

New York—Sixty-Seven Hundred River Taxicab Co.; motor cars; capital stock \$2,000; incorporators, Terence Cuskey, Thomas Dunn and John Bristol.

New York—Turner-Sapienza Corporation; capital stock \$5,000; incorporators, Francis L. Pruyn, Joseph Sapienza and Howard W. Turner.

Orange, Conn.—Cameron Car Co.; capital stock \$200,000; incorporators, Everett S. Cameron, A. C. White and Albion B. Emerson.

Ottawa, Ont.—Auto Products Co.; to manufacture motor cars; capital stock \$250,000; incorporators, William Joseph Halpin, Reynolds Dalmege Bray, Patrick Joseph Daly and Lawrence Robert O'Connell.

Pierre, S. D.—Sioux City Motor Sales Co.; capital stock \$25,000; incorporators, H. D. Levitt, W. T. Worth and Freeman Lynch.

Quincy, Ill.—Wellman-Leftwich Tire Service Co.; to deal in tubes, tires and motor car accessories; capital stock \$2,000; incorporators, Burwell O. Leftwich, Daniel G. Taylor and James N. Wellman.

St. Clairsville, O.—St. Clairsville Garage Co.; capital stock \$20,000; incorporators, John Anderson, E. A. Caldwell, Wm. M. Caldwell, Thomas J. McNamee and Otto Rothmeier.

St. Paul, Minn.—Moyer Motor Engineers; capital stock \$50,000; incorporators, Amos F. and Marie E. Moyer and A. H. Hitzemann.

St. Louis, Mo.—Battery Service Co.; to manufacture, sell and deal in storage batteries; capital stock \$3,000; incorporators, William O'Shure, M. J. Cline and F. B. Jennings.

St. Louis, Mo.—Motor Transportation Co.; capital stock \$10,000; incorporators, Hermann C. Stifel, Rudolph A. Huber and N. C. Hadley.

Terre Haute, Ind.—Steinhart-Grieger Automobile Co.; to handle Reo and Cadillac cars; incorporators, H. O. Grieger, G. H. Grieger and E. W. Steinhart.

Toledo, O.—McNaull Auto Tire Co.; capital stock \$175,000.

Toledo, O.—Sun Motor Car Co.; to manufacture a light six-cylinder car; capital stock \$750,000.

White Plains, N. Y.—Kissel Kar Garage Co.; motor cars; capital stock \$5,000; incorporators, H. R. Clark, E. R. Stafford and P. W. Gaylor.

Wilmington, Del.—The International Shock Absorber Co.; to manufacture, sell and deal in shock absorbers, brakes, clutches, etc.; capital stock \$5,000; incorporators, N. P. Coffin, H. L. Mullin and C. M. Egner.

Windham, Conn.—Thread City Garage; capital stock \$25,000; incorporators, Fred D. Jordan, William P. Jordan and George E. Hinman.

Xenia, O.—Xenia Garage Co.; capital stock \$2,500; incorporators, J. B. Rice, Mrs. Frances Rice, C. W. Craig, M. J. Schmidt and Mrs. N. B. Schmidt.

New Garages, Repair Shops and Service Stations

ARKANSAS		
Town	Firm	Supplies
Little Rock	The Auto Exchange	Used cars
CALIFORNIA		
Colton	Colton Garage	Service
Long Beach	J. F. McSwain	Tires
ILLINOIS		
Rock Island	Carpenter & Donaldson	Garage
Rockford	J. W. Kelley	Garage
Peoria	Edward Johnson	Garage
Peoria	Carl Hulsebus	Garage
Aurora	Lincoln Auto Parts Co.	
		Accessories
Byron	Henry Vanston	Garage
Freeport	Rigney & Knipschild	Garage
Ogden	Firebaugh & Scott	Garage
Streator	H. & J. Strutzel	Garage
Washburn	J. E. Sommers	Garage
KENTUCKY		
Louisville	Glenn Tire Co.	Goodyear tires

MANITOBA		
Town	Firm	Supplies
Ontario	Casa Blanca Garage	Garage
Winnipeg	Acme Magneto & Electric Co.	Repairs
MICHIGAN		
Hancock	Bridgman Russell Co.	Garage
MINNESOTA		
Minneapolis	N. F. Pratt	Garage
MISSOURI		
St. Louis	L-Ty-To-Co.	Service
St. Louis	Tate-Gillham Motor Car Co.	
St. Louis	United Sales Co.	Tires
NEW JERSEY		
Jeromeville	Carl Bros.	Garage
Elizabeth	Union Motor Co.	Repairs
Newark	Cadillac Motor Co.	Service
NEW YORK		
Brooklyn	C. Cooper	Garage

OHIO		
Town	Firm	Supplies
Coshocton	Crowthers Auto Sales Co.	Garage
Columbus	George A. Hassen & Co.	Tires
Cleveland	Willard Storage Battery Co.	
Columbus	Columbus Electric Garage	
Columbus	Fourth-Chestnut Garage	
PENNSYLVANIA		
Sharon	M. V. DeForest	Service
Easton	Monroe Stauffer	Garage
Easton	J. H. Fulmer Auto Co.	Garage
Philadelphia	Francis Hogarth	Garage
Philadelphia	J. M. Herr	Garage
WASHINGTON		
Seattle	Crary Ford Starter Co.	Crary starter

Recent Agencies Appointed by Motor Car Manufacturers

ALABAMA			MARYLAND			NEW YORK		
Town	Agent	Make	Town	Agent	Make	Town	Agent	Make
Opelika.....	C. R. Summers.....	Abbott-Detroit	Baltimore.....	Autocar Sales & Service Co.....		Bayonne.....	C. W. Beckman.....	Chandler
ARKANSAS			Oakland.....	Ravescroft Garage.....	Autocar	Bayport.....	Wm. L. Mantha & Co.....	Oldsmobile
Little Rock.....	U. S. Motor Co.....	King	MAINE			Bridgehampton.....	John E. Halsey.....	Crow-Elkhart
CALIFORNIA			Dexter.....	Blaisdell Auto Co.....	Maxwell	Buffalo.....	E. T. Parkes.....	Autocar
Del Mar.....	George Dawson.....	Case	Portland.....	Franklin Motor Car Co.....	Autocar	Freeport.....	A. F. Winegar.....	Dort
Los Angeles.....	M. S. Bulkeley & Co.....	Autocar	Waldboro.....	C. B. Stahl.....	Chandler	Hemlock.....	Roswell Davis.....	Crow-Elkhart
Los Angeles.....	Smith Bros.....	Paige	MASSACHUSETTS			Menands.....	V. P. Owen.....	Chandler
Oakland.....	Muller Auto & Garage Co.....	Chalmers	Boston.....	Autocar Sales & Service Co.....		New York.....	H. R. Hill.....	Oldsmobile
Pasadena.....	A. L. Rider Co.....	Chalmers	Boston.....	J. W. Bowman Co.....	Vellie	Naples.....	M. N. Fox.....	Chandler
Pasadena.....	J. F. Wilber.....	Regal	Boston.....	Regal Motor Sales Co.....	Pathfinder	Ogdenburg.....	H. G. Chandler.....	Chandler
Pomona.....	Porter & McCormack.....	Chandler	Boston.....	D. C. Tiffany Co.....	Ward Elec.	Portchester.....	Reynolds' Empire Garage Co.....	Chandler
Porterville.....	J. W. Stephens.....	Dodge	North Adams.....	Arnold Print Works.....	Studebaker	Troy.....	Troy Automobile Exchange.....	
San Francisco.....	Crow Elkhart Auto Agency.....		Springfield.....	Autocar Sales & Service Co.....	Autocar	Watertown.....	George H. Balta.....	Dort
San Francisco.....	H. B. Rector Co.....	Marmon	Worcester.....	O. A. Kelley Co.....	Vellie	NORTH CAROLINA		
COLORADO			Worcester.....	Studebaker Corp.....	Studebaker	Charlotte.....	George Fitzsimon.....	Chandler
Boulder.....	Wolcott & Blake.....	Oldsmobile	MICHIGAN			North Wilkesboro.....	Yadkin Valley Motor Co.....	King
Colorado Springs.....	C. T. Gauss.....	Chevrolet	Battle Creek.....	Cushman Auto Sales Co.....	Ford	NORTH DAKOTA		
Colorado Springs.....	C. T. Gauss.....	Monroe	Detroit.....	A. A. Crumley Co.....	King	McVie.....	McVie Auto Co.....	Crow-Elkhart
Colorado Springs.....	Huffman & Gilbert.....	Case	Farmington.....	Wm. Goers.....	Oakland	Regent.....	C. Rafferty and H. G. Lue.....	Crow-Elkhart
Colorado Springs.....	Strang Garage Co.....	White	Freemont.....	Evans-Timney Co.....	Studebaker	Wahpeton.....	Red River Motor Co.....	Crow-Elkhart
Creede.....	Samuel McKibben.....	Monroe	Grand Rapids.....	C. D. Miller.....	Chalmers	OHIO		
Denver.....	Hupp Motor Sales Co.....	Locomobile	Grass Lake.....	T. B. Jones.....	Hollier Eight	Akron.....	Beynon Motor Sales Co.....	Chandler
Denver.....	Mallin-Hough Motor Co.....	Chevrolet	Jackson.....	John A. Bennett.....	Cadillac	Byron.....	Erman Peterson.....	Chandler
Denver.....	Mallin-Hough Motor Co.....	Monroe	Ludington.....	Peter Peterson.....	Studebaker	Celina.....	J. D. Davis.....	Crow-Elkhart
Denver.....	J. S. Morrison Auto Co.....	Dort	Manton.....	A. B. Bartlett.....	Overland	Cincinnati.....	J. W. Wozencraft & Co.....	
Eads.....	R. W. Wansted.....	Chevrolet	Munger.....	Schneetler Bros.....	Crow-Elkhart	Cleveland.....	Hamilton Motor Car Co.....	
Eads.....	R. W. Wansted.....	Monroe	Niles.....	Plankam Bros.....	Dort	Columbus.....	George W. Carroll, Abbott-Detroit	
Fort Collins.....	Everett R. Hopper.....	Oldsmobile	Pigeon.....	Leiprandt Bros.....	Dort	Columbus.....	Brasher Motor Car Co.....	Cole
Fort Collins.....	Benn Mossman.....	Chevrolet	Rockland.....	G. W. Stannard.....	Dort	Columbus.....	Broad Oak Automobile Co.....	
Fort Collins.....	Benn Mossman.....	Monroe	Saginaw.....	Electric Vehicle Co.....	Saxon	Columbus.....	Snyder Automobile Co.....	Scripps-Booth
Fort Morgan.....	J. H. Croft.....	Oldsmobile	Sault Ste. Marie.....	Wynn Sales Co.....	Dodge	Columbus.....	G. E. Thomas Co.....	Winton
Glenwood Springs.....	G. A. Hopkins.....	Oldsmobile	Three Rivers.....	Cook & Hagenbuch.....	Crow-Elkhart	Columbus.....	Winders Motor Sales Co.....	Monroe
Grand Junction.....	Western Slope Auto Co.....	Oldsmobile	Vassar.....	Karl V. Mott.....	Dort	Dayton.....	Columbia Garage.....	Crow-Elkhart
Idaho Springs.....	E. F. Galligan.....	Chevrolet	MINNESOTA			Huron.....	G. E. Rhinemiller.....	Chandler
Idaho Springs.....	E. F. Galligan.....	Monroe	Duluth.....	J. M. Ford.....	Winton	Ironton.....	F. A. Marting.....	Maxwell
Julesburg.....	Parker Bros.....	Oldsmobile	Minneapolis.....	Relly-Herz Co.....	New Era	Lewisville.....	L. E. Stegner & Sons.....	
Littleton.....	H. L. Potts.....	Chevrolet	Ortonville.....	Art Powell.....	Hupmobile	Lima.....	Cadillac Co.....	Oldsmobile
Littleton.....	H. L. Potts.....	Monroe	Redwood.....	Farrell & Keefe.....	Ford	Marion.....	Barnhouse-Hemmerly Auto Co.....	Oldsmobile
Longmont.....	Watts & Hilton.....	Chevrolet	Silver Lake.....	A. L. Danek.....	Ford	Marion.....	Ralph C. Mount.....	Argo
Longmont.....	Watts & Hilton.....	Monroe	St. Paul.....	Joswick Mfg. Co.....	Saxon	Middletown.....	H. R. Gardner.....	Chandler
Meeker.....	Herbert & Hilton.....	Chevrolet	St. Paul.....	W. L. Molan.....	Autocar	Portsmouth.....	J. D. Bridges.....	Case
Meeker.....	Herbert & Hilton.....	Monroe	Worthington.....	Ulrich Auto Co.....	King	Rockyridge.....	Roy G. Barringer.....	Crow-Elkhart
Pueblo.....	Silver State Auto Co.....	Oldsmobile	MISSOURI			Spratt.....	George H. Gillogly.....	Dort
Pueblo.....	Kneble Auto Co.....	Chevrolet	Hannibal.....	Empire Auto Co.....	Herff-Brooks	Stenheville.....	Master & Barlow.....	Crow-Elkhart
Pueblo.....	Kneble Auto Co.....	Monroe	Hannibal.....	L. G. Wilhelm.....	Overland	Tippecanoe City.....	Theodore N. Bell.....	Chandler
Salida.....	Salida Auto Co.....	Oldsmobile	Leeton.....	Laura B. Epperson.....	Case	Wilmington.....	Bonta & Davis.....	King
Steamboat Springs.....	C. A. McClelland.....	Hupmobile	St. Louis.....	De Luxe Auto Co.....	Crow-Elkhart	Youngstown.....	Motor Sales & Supply Co.....	
Sterling.....	Felkner Auto & Mach Co.....	Oldsmobile	St. Louis.....	Donovan Auto Co.....	Paterson	OKLAHOMA		
Victor.....	Woods Auto Co.....	Hupmobile	St. Louis.....	Frye Motor Car Co.....	Saxon	Tulsa.....	Jordan & Bowen.....	Case
Walsenburg.....	Woods Auto Co.....	Oldsmobile	St. Louis.....	Monarch Motor Sales Co.....	King	PENNSYLVANIA		
DISTRICT OF COLUMBIA			Sedalia.....	A. M. Hampton.....	Case	Bloomsburg.....	Zehner Bros.....	Chandler
Washington.....	Autocar Sales & Service Co.....	Autocar	Springfield.....	Benjamin Toothman.....	Oldsmobile	Clarion.....	R. F. McClaim.....	Chandler
DELAWARE			Ennis.....	Porter Nelson.....	Dodge	Easton.....	R. B. Bridge.....	Autocar
Wilmington.....	Autocar Sales & Service Co.....		MONTANA			Ephrata.....	Harry W. Kellor.....	Crow-Elkhart
Wilmington.....	Delmar Auto Co.....	Chandler	Ainsworth.....	L. F. Corbitt.....	Oakland	Erle.....	F. C. Schauble.....	Herff-Brooks
FLORIDA			Arlington.....	C. H. Eakin.....	Oakland	Harrisburg.....	Moon Bros.....	Crow-Elkhart
Lake City.....	National Hy. Garage.....	King	Bancroft.....	Alvin Browning.....	Oakland	Harrisburg.....	Andrew Redmond.....	Autocar
Tallahassee.....	Brown's Garage.....	King	Beemer.....	C. J. Neller.....	Oakland	Hillsdale.....	Deering & Maddy.....	Crow-Elkhart
W. Palm Beach.....	Palm Beach Merc. Co.....	Autocar	Beatrice.....	G. O. Rains & Co.....	Oakland	Irwin.....	Weaver Myers Auto Co.....	
GEORGIA			Benkelman.....	E. A. Mathews.....	Oakland	Jerome.....	C. F. Truax.....	Chandler
Columbus.....	C. E. Porter, Jr.....	Abbott-Detroit	Broken Bow.....	Carothus & Brittan.....	Oakland	Lebanon.....	Lebanon Truck & Auto Service.....	
IDAHO			Burwell.....	Meyers & Manasil.....	Oakland	Nazareth.....	James H. Harty.....	Autocar
Blackfoot.....	Red Cross Garage.....	Oldsmobile	Ceresco.....	Anderson & Dahlstrom.....	Oakland	Philadelphia.....	Autocar Sales & Service Co.....	Autocar
IOWA			Clarkson.....	Pokorney & Vrasper.....	Oakland	Pittsburgh.....	Hiland Auto Co.....	Autocar
Council Bluffs.....	Kimball Tire Case Co.....	Chandler	Curtis.....	D. O. Nelson.....	Oakland	Reading.....	Merchants Auto Service Co.....	
Earling.....	F. W. Wilmerding.....	Chandler	Dalton.....	J. C. Frandsen.....	Oakland	Reading.....	Oldsmobile Co.....	Oldsmobile
Gilmerworth.....	O. S. Nelson.....	Chandler	Eustis.....	E. E. West.....	Oakland	Scranton.....	D. M. Campbell.....	King
Gilmerworth City.....	H. Mulholland.....	Chandler	Freemont.....	Charles Ulrich & Co.....	Oakland	Scranton.....	Ernst & Beavers Co.....	Autocar
Lone Tree.....	U. Baker.....	Abbott-Detroit	Gibbon.....	Walker & Wallace.....	Oakland	Wayside.....	Frolik & Tisler.....	Herff-Brooks
Lemars.....	Kilburn-Rickabaugh Co.....	Oakland	Gordon.....	A. E. Park.....	Oakland	RHODE ISLAND		
Newell.....	W. D. Rust & Son.....	Chandler	Grant.....	W. A. Westenberg.....	Oakland	Providence.....	Autocar Sales & Service Co.....	Autocar
Oakland.....	F. W. Pierce.....	Oakland	Greenwood.....	A. E. Palling.....	Chandler	SOUTH DAKOTA		
Shenandoah.....	A. F. Woodard.....	Oakland	Hampton.....	Hampton Auto Co.....	Oakland	Centerville.....	Shidler & Smith.....	Mitchell
Silver City.....	F. W. Anderson.....	Oakland	Holbrook.....	Henry Krause.....	Oakland	Emery.....	P. H. McManus & Son.....	Oakland
Sioux City.....	Cole Motor Sales Co.....	Cole	Hollows.....	Mestl Bros.....	Oakland	Turton.....	L. G. Mannie.....	Ford
Stanton.....	Stanton Auto Co.....	Oakland	Julian.....	S. A. Wilberger.....	Oakland	Volga.....	Lee & Lee.....	Case
Stanton.....	C. J. Anderson.....	Chandler	Kenesaw.....	Wm. Primm.....	Oakland	TENNESSEE		
Traer.....	T. F. Cohrt.....	Chandler	Kilgore.....	J. H. Packer.....	Oakland	Knoxville.....	Harth Automobile Co.....	King
ILLINOIS			Lincoln.....	F. A. Roehl.....	Oakland	TEXAS		
Algonquin.....	Peter Bros. Mfg. Co.....	Chandler	Minden.....	J. A. Slater.....	Oakland	Estelline.....	V. Y. Clark.....	Crow-Elkhart
Asklum.....	Eugene N. Lemangger.....	Chandler	McCook.....	M. M. Brumley.....	Oakland	Marshall.....	L. S. Hawley.....	Chandler
Aurora.....	L. D. Krumanf.....	Oldsmobile	McCool Jet.....	A. R. Marshall.....	Oakland	Wichita Falls.....	M. M. Cooke.....	Chandler
Bloomington.....	Frank H. Cole.....	Reo	Nebraska City.....	Grassmuck Bros.....	Oakland	UTAH		
Bradford.....	J. H. Anderson.....	Crow-Elkhart	Norfolk.....	Scott Auto Co.....	Oakland	Logan.....	King Motor Sales Co.....	King
Capron.....	Cornwall & Montgomery.....		Orleans.....	Lideen Hardware Co.....	Oakland	Salt Lake City.....	Salt Lake Auto Co.....	Autocar
Cerro Gordo.....	Adams & Gordo.....	Jeffery	Ohio.....	G. F. Spelde.....	Oakland	VIRGINIA		
Cerro Gordo.....	Adams & Gordo.....	Dodge	Oscola.....	Meridian Garage.....	Oakland	Newport News.....	Hudson Hardy Co.....	Chandler
Chicago.....	Autocar Sales & Service Co.....		Petersburg.....	Nick Ottele & Son.....	Oakland	Norfolk.....	Commercial Cars Corp.....	Autocar
INDIANA			Plymouth.....	Nispel & Metcalf.....	Oakland	Richmond.....	White Motor Co.....	Autocar
Griggsville.....	Anderson & Hardy.....	Crow-Elkhart	Sargent.....	R. A. George.....	Oakland	Staunton.....	Central Garage.....	Autocar
Kewanee.....	Kekane Garage.....	Chandler	Seneca.....	Thos. McCawley.....	Oakland	WASHINGTON		
Princeton.....	Miles S. Fox.....	Chandler	Scribner.....	Boll & Zeman.....	Oakland	Olympia.....	Daly & Meyers.....	Chandler
Rapate.....	Wood Bros.....	Case	Silver Creek.....	Graham Bros.....	Oakland	Seattle.....	Motor Car Co.....	Marmon
Rosemond.....	Vincent & Simpson.....	Crow-Elkhart	Stanton.....	A. V. Johnston Auto Co.....	Oakland	Spokane.....	W. S. Dulmage.....	Chevrolet
Sublette.....	Loffelman & Lauer.....	King	Syracuse.....	James H. Eaton.....	Oakland	Tacoma.....	Cole Spokane Motor Co.....	King
Weldon.....	M. F. Shinneman.....	Reo	Talmage.....	Charles Brehm, Jr.....	Oakland	WEST VIRGINIA		
KANSAS			Thayer.....	Aug. Heldreder & Son.....	Oakland	Charleston.....	Clint Litton.....	Crow-Elkhart
Atchison.....	E. J. Donnelly.....	King	Utica.....	Aug. Heldreder & Son.....	Oakland	Glen Jean.....	Robert Essex.....	Herff-Brooks
Colby.....	Eugene A. Volson.....	Case	Valentine.....	H. W. Harper Auto Co.....	Oakland	Wheeling.....	Mound City Auto Co.....	Chandler
Phillipsburg.....	W. H. Champlin.....	Chandler	Wilsonville.....	J. B. Andre.....	Oakland	WISCONSIN		
KENTUCKY			Wisner.....	Chris Jensen.....	Chandler	Beloit.....	J. F. McKearn.....	Dort
Ft. Thomas.....	Highland Auto & Garage Co.....		NEW JERSEY			Columbus.....	Fred T. Belinke.....	Chandler
Russell.....	F. A. Marling.....	Maxwell	Bridgeton.....	David R. Mitchell.....	King	Green Bay.....	DuBois-Haavers Co.....	Dort
Waverly.....	Waverly Motor Car Co.....		Newark.....	Autocar Sales & Service Co.....		Portage.....	Portage Boat & Engine Co.....	
LOUISIANA			Riverton.....	George M. Wiemer.....	King	WASHINGTON		
Winnsboro.....	J. H. Richardson.....	Crow-Elkhart	Trenton.....	Brook's Garage.....	Autocar	Washburn.....	T. H. Washburn.....	Ford
MARYLAND			NEW MEXICO			Westville.....	Schauer Bros.....	Dort
Albuquerque.....	J. L. La Driere.....	Oldsmobile	Albuquerque.....	J. L. La Driere.....	Oldsmobile			
Fort Sumner.....	Carl Frymire.....	Oldsmobile	Las Vegas.....	Midway Garage.....	Oldsmobile			
Las Vegas.....	Midway Garage.....	Oldsmobile	Raton.....	E. J. Love Motor Co.....	Oldsmobile			
Raton.....	E. J. Love Motor Co.....	Oldsmobile	Santa Fe.....	Modern Garage.....	Oldsmobile			
Santa Fe.....	Modern Garage.....	Oldsmobile	Taos.....	T. P. Martin.....	Oldsmobile			
Taos.....	T. P. Martin.....	Oldsmobile						

Where Dependability Counts

On the long, hard pull you appreciate Champion Spark Plugs.

They have the *built-in* ability to withstand the terrific force of those hill crest explosions.

We subject each separate Champion Plug to every conceivable test in the motor for which it is intended. It is exhaustively tried at every brake load—every speed.

It receives test after test until we know it will stand up

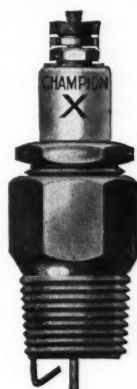
under the greatest stress.

75% of all American made motors for every purpose are equipped at the factory with Champion Spark Plugs.

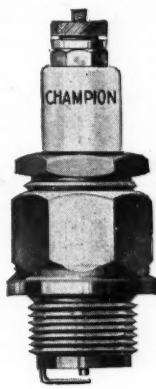


Champion

"TOLEDO MADE FOR THE WHOLE WORLD'S TRADE"



Champion
X
Special 1/2 inch
Price 75c
Factory Equipment on
all Ford cars
since 1911



Champion
Regular
7/16-18 Long
Price \$1.00
Standard Factory
Equipment for Max-
well cars.



Champion
Heavy Duty
1/2 inch
Price \$1.00
All Studebaker cars
are equipped at the
Factory with this plug.

It will pay you to be guided by the opinion of the country's greatest automobile engineers. Equip your motor with Champions.

There is a Champion specially designed for every motor. Be sure to get the

right Champion for your car.

The Champion Guarantee—Complete satisfaction to the user, free repair, replacement or money back.

Champion Spark Plug Co.

1515 Upton Avenue

Toledo, Ohio

Dealers—If you did not secure out profit-sharing contract for all of 1915, do not fail to secure one effective for the last 6 months of the year. See your jobber's salesman or write direct to us.





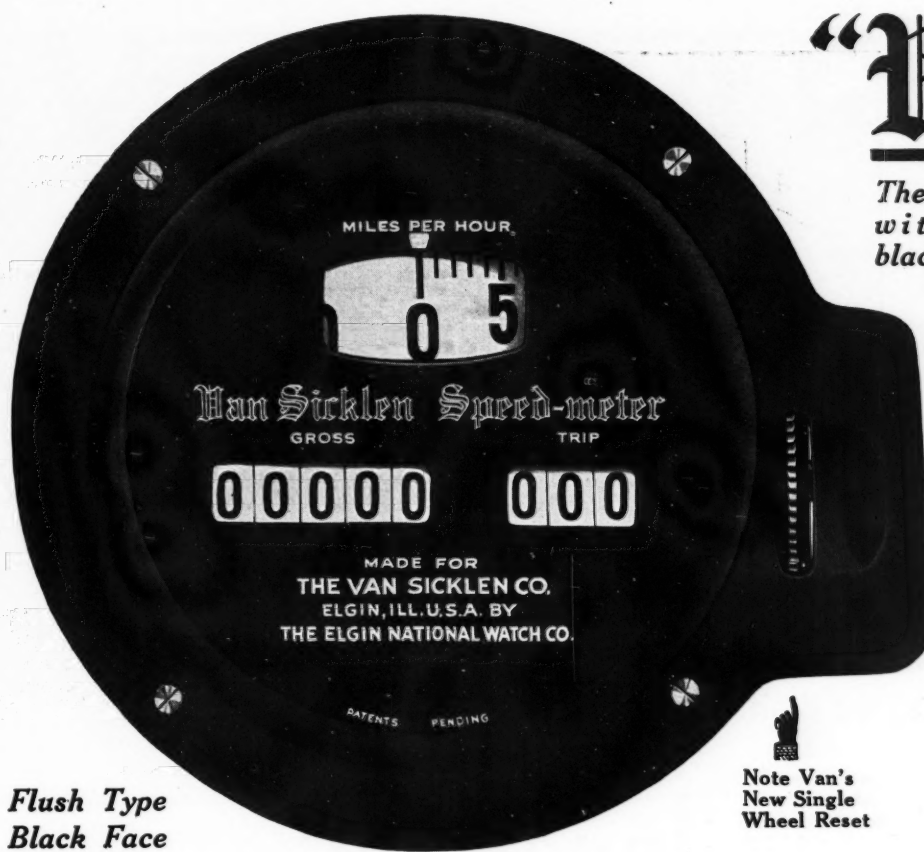
8000
Feet Above
Sea Level
with a
SCHEBLER
CARBURETOR

(TELEGRAM)

Wheeler & Schebler,
Indianapolis, Ind.

8,000 feet above sea level between Cheyenne and Laramie across the great Continental Divide. Carburetor working splendidly despite terrific altitude and thin atmosphere. Studebaker Lincoln Highway car eating up stiffest grades. Motor never loaded—stays clean as whistle on hardest pulling.

J. MEINZINGER,
Driver Studebaker Lincoln Highway car
en route New York to Frisco.



"Van"

*The speed-meter
with the big
black figures*

*Flush Type
Black Face
Actual Size*

Note Van's
New Single
Wheel Reset

Van knows the smell of castor oil. He has ridden with more than one racing driver—been jolted and pounded for hours over the course at terrific speeds. And he's stood the gaff without a quiver.

Van is built for rougher usage than he is likely to meet in the most abusive service of everyday motoring.

"Built Like a Watch---by Watch Makers"

THE VAN SICKLEN COMPANY

GENERAL OFFICES:
14 Chicago St., Elgin, Ill.

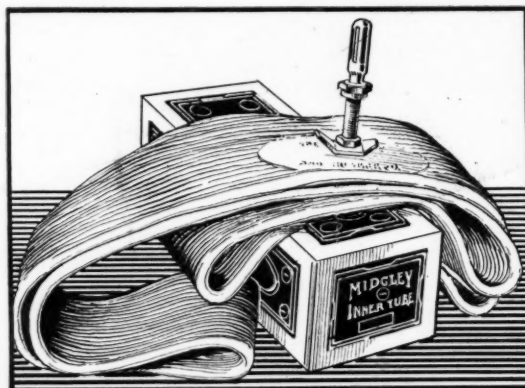
FACTORY:
Elgin National Watch Co.

Factory Representatives: Cutting, Armstrong & Smith Sales Co., Detroit, Mich., for the States of Michigan, Ohio and Indiana

General Distributors: The Beckley-Ralston Company, Chicago

Eastern Distributors: A. J. Picard & Co., 1722 Broadway, New York City

Foreign Distributors: Mestre & Blatge, 20 Store St., Tottenham Ct. Rd. W. C., London, England



A GOOD tire with a poor inner tube is like a good engine with a poor carburetor. Just as the latter impairs the performance of the engine, so a poor tube cuts down the service of the best tire made.

Midgley Inner Tubes

are not cheap tubes. The choice Para Rubber used, the many thin sheets of rubber instead of one thick sheet, the extra toughness and the non-porous quality all add to manufacturing expense. Yet they cost you no more than many inferior grades.

Midgley Tubes give your customers not only better quality but more miles for the money they spend.

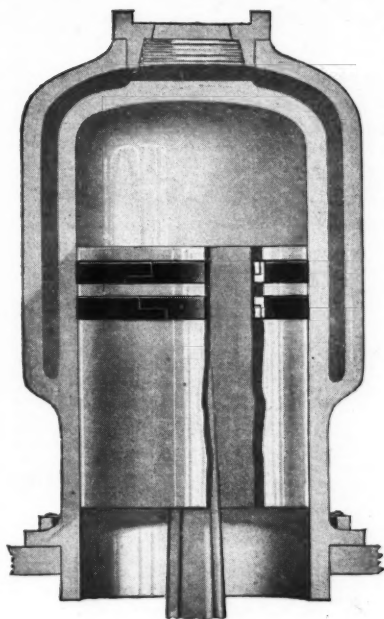
Write for Booklet No. 11

Midgley Non-Skid and Plain Tread Tires and Inner Tubes

Manufactured Only By

The Midgley Tire & Rubber Company
Lancaster, Ohio

VAPOR TIGHT RINGS



STAND THE TEST OF TIME

For many years the rings made by the Baker Valve Company have been successfully used on all heavy motors.

The Vapor-Tight Piston Ring is a double ring of unusual flexibility, with the splits sealed perfectly. It absolutely eliminates leakage. The Vapor-Tight automatically takes up the wear without allowing any of the gas or the oil to leak through. The Vapor-Tight is made without pins, and therefore is in no danger of being broken by the weakening of the ring caused in sinking the pin.

ONLY TWO VAPOR TIGHT RINGS NEEDED

Many so-called "leak-preventing" piston rings are on the market. Few have been severely tested. Some manufacturers attempt to install as many rings as a motorist will purchase. The Vapor-Tight Rings do the work with two rings where others require three or more with not as good results. We know, because the Vapor-Tight Rings have been given the test of time. They have been on the market for 8 years.

The Vapor-Tight Ring sells at about the same price as other high class rings, but because only two Vapor-Tight Rings are necessary for a cylinder, it is much cheaper from the first.

If you are a jobber or a dealer, write today for our special introductory proposition.

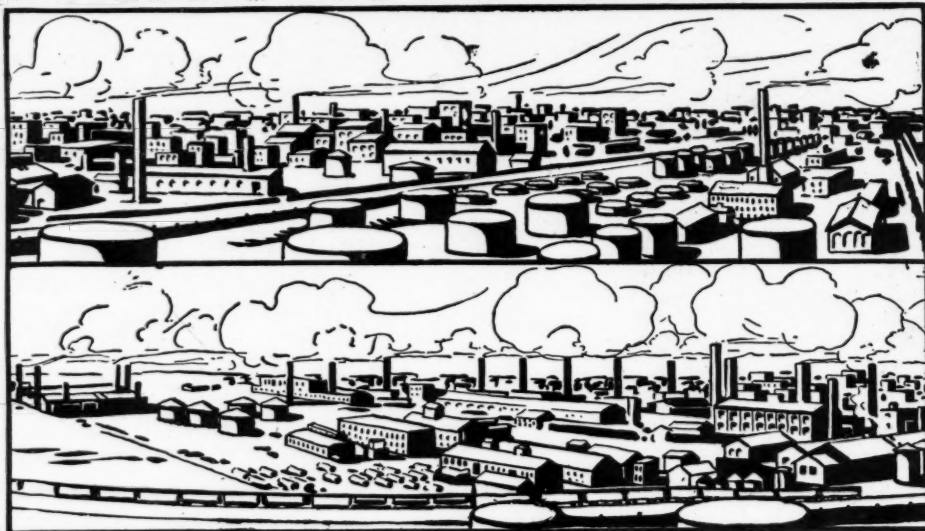
Two Vapor Tight Rings in each piston will seal the cylinder for compression and prevent carbonization. Notice in the above cut how the rings are placed. No gas or oil can get past the small inner rings. The first ring allows no oil to get into the combustion chamber when the pistons are drawing gas, and at the same time creating a vacuum which exerts a tremendous suction on the lubricating oil. It is the burning of lubricating oil that causes carbonization. The second ring insures perfect compression. Each ring helps the other do its work.

You need vapor-tight cylinder pistons to get more power—to save fuel—to save oil. Make them vapor-tight by using Vapor-Tight Rings.

Your dealer will gladly secure these rings for you, or write us giving the model and make automobile you have and your dealer's name, and we will ship you direct.

BAKER VALVE COMPANY

Bloomington Station
Minneapolis, Minn., U. S. A.



The Great Standard Oil Company Plant at Whiting, Ind.

Where Science Produces the *Scientific Lubricant* for Motor Cars

Here, in this modern plant, is every known facility for the perfection of motor oil.

Here are expert mechanics who within the past twenty years have studied every standard make and type of motor car produced.

Here is a staff of eminent chemists constantly working to improve

Polarine. The result is, this oil has reached the limit of today's possibilities.

Better oil can't be made until new methods are found to improve on those we use. No expense is too great—no care too extreme—if we can better Polarine even a trifle.

Polarine

FRICION REDUCING MOTOR OIL

There is need for such oil in *your* motor. For good oil not only means maximum power but prolongs the life of the motor and cuts down expense.

Insist on getting Polarine—accept no substitutes.

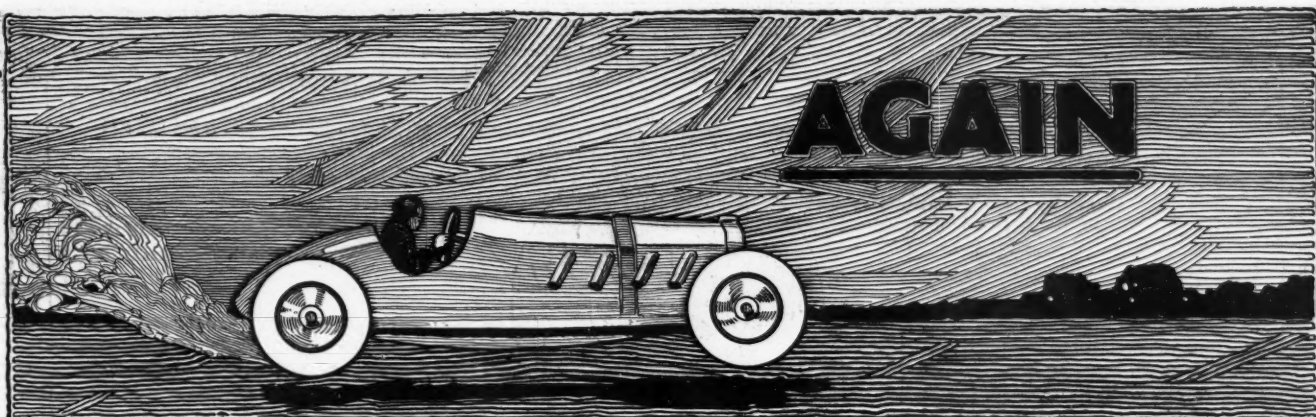
It costs no more per gallon to buy than some oils not half as good.

STANDARD OIL COMPANY

(INDIANA)
CHICAGO, U. S. A.

Also producers of Red Crown Gasoline—the scientific fuel

(382)



BOSCH WINS

C. A. C. Cup Race

- 1st—Cooper, Stutz . . . Bosch Magneto
2nd—Anderson, Stutz . . Bosch Magneto
3rd—Oldfield, Delage . . . Bosch Magneto

Elgin Trophy Race

- 1st—Anderson, Stutz . . . Bosch Magneto
2nd—Cooper, Stutz . . . Bosch Magneto
3rd—O'Donnell, Duesenberg. Bosch Magneto

*All of the cars to finish
used Bosch Magnetos*

**There's a garage in your town that'll
make your car Bosch Equipt**

BOSCH MAGNETO CO., 214¹ West 46th Street, New York
Over 300 Service Stations to Serve Bosch Users



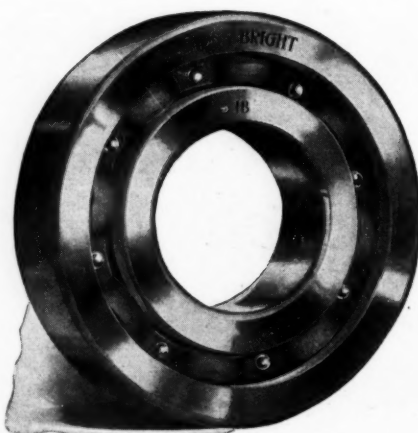
THE dominancy of ball bearings in racing cars is a striking tribute to their greater efficiency for power transmission in motor car construction.

¶ To the best of our knowledge and belief not one single racing classic either here or abroad has ever been won on other than a ball bearing equipped car.

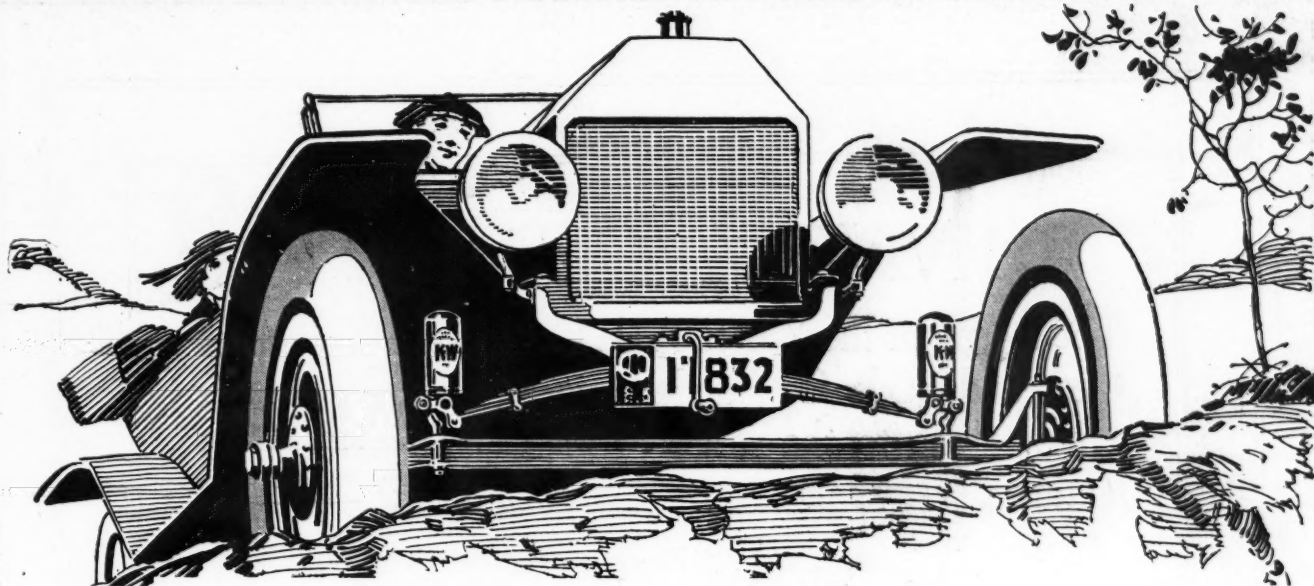
¶ Racing drivers and car makers know that the use of other than ball bearings compromises the efficiency of their cars. So for that reason practically all racing cars (which must stand the terrific stress of sustained speed generally in excess of a hundred miles an hour) are ball bearing equipped throughout.

¶ In other words—the greater the demands from a standpoint of speed and endurance, the more certain are ball bearings to be used.

The Hess-Bright Mfg. Co.
Philadelphia, Pa.



Hess-Bright Ball Bearings are patented



Enjoy the Scenery—Forget the Bumps

Be a Tourist—Not a Mere Road Inspector

Many motorists today are slaves to the road. Their daily drives and week end trips are limited because of rough, rutty roads. They arrive home tired from being bumped around and "picking the roads"—they see nothing else all day.

Don't be a mere road inspector—equip your light, economical Ford with K-W Road Smoothers and get the greatest enjoyment and comfort.

K-W Road Smoothers give you this enviable comfort because their design combines these four vital factors.

1. A spring to effectively take up the shock.
2. An anti-rebound air chamber to check the rebound.
3. Anti-side motion links to prevent side rocking and swaying.
4. A construction that absolutely does not interfere with the steering.

Each of these features is in itself vital to your comfort and safety. It's only when they are combined in one device that you will get the greatest pleasure from your car. Here's how the K-W Road Smoother fills all these requirements:

The K-W Spring

A helical spring that effectively takes up the shock, made of electric smelted, chrome vanadium steel. The K-W bracket design allows almost twice the length of spring action or "travel" (in actual service) of any other.

The K-W Air Chamber

The anti-rebound air chamber with its smooth fitting piston acts like a door check, and gently "eases off" the rebound of the spring. This is an exclusive K-W feature. Its design provides a strong, tough, self-lubricating piston, working in a dust-proof air chamber. It requires no attention.

The K-W Side Motion Links

Made of the highest grade heat-treated drop forgings of remarkable toughness. This enables them to withstand the great strain put upon them. They prevent your car from pitching, swaying or skidding while making sharp turns.

\$15 SET OF FOUR
ONE FOR EACH WHEEL



K-W Bushings

All bearings are phosphor bronze throughout. That means long life. K-W Road Smoothers do not interfere with steering.

But you can find all of these vital factors only in K-W Road Smoothers

That is why they lengthen the life of your car, by eliminating shock and vibration. Tire economy is assured, because K-W Road Smoothers enable the wheels (not the whole body of the car) to follow the contour of the road. That means no grinding off the rubber of the tires. K-W Road Smoothers always make good because they are built with characteristic K-W Quality throughout.

But after all's been said and done, it's results that count; and the K-W guarantee covers not only workmanship and material but results as well.

K-W Road Smoothers are quickly and easily attached. No holes to drill and no tools necessary except a wrench. And the final and biggest advantage you get from K-W Road Smoothers is that they increase the radius of your car's usefulness, and bring you home with that "satisfied feeling" after a day of comfortable motoring.

If your dealer can't supply you, sent prepaid upon receipt of price.

Write for Booklet "That Satisfied Feeling"

THE K-W IGNITION CO.
2835
Chester Ave. CLEVELAND, OHIO, U.S.A.
Makers of 125,000 K-W Master Vibrators

ANNOUNCEMENT

The merger of the Yuster Axle Co. and the Torbensen Gear and Axle Co., under one administration, adds a new name to the roster of high grade axle manufacturers.

The Columbia Axle Company
826 East 72nd Street
Cleveland, Ohio

Hereafter Yuster automobile axles will bear the name "Columbia". while the name "Torbensen" will distinguish the commercial car axles produced by the new company.

The centralization of the Yuster and Torbensen interests, organizations and facilities under one management—one over-head—under the same roof—adds present strength and prepares for the future development of each product.

THE COLUMBIA AXLE COMPANY
826 East 72nd Street, Cleveland, Ohio

PAIGE

The Standard of Value and Quality

The Fulfilment of Paige Prophecy

THE Price—\$1,295—of the new, greater, more beautiful Paige Fairfield "Six-46" was announced about a month ago.

At that time we prophesied that at this extraordinary price the new Fairfield would duplicate the record-breaking sales of the Fairfield "Six-46" which was introduced—at \$1395—last January.

A month ago we prophesied that with the even greater beauty and motor-ing luxury and even MORE QUALITY, at an even lower price, the new Fairfield would sweep the country and dominate The Six Field—just as the former Fairfield did—at \$1395. So much for the Fairfield.

The Paige Hollywood, the light "Six-36," the five-passenger reproduction of the Fairfield, was announced at \$1095 about two months ago.

At that time we prophesied that this magnificent five-passenger value, with its marvel of power and easy riding and easy control, with its distinctive Paige beauty and through-out quality, would dominate the five-

passenger "Six" field—precisely as the "Big Six" dominates the seven-passenger field.

How Accurate Was Our Prophecy?

No matter where you may live, you—as an automobile dealer—are in position to answer that question for yourself.

You *know* that Paige Agencies are the busiest Agencies in the Country.

You *know* that Paige demand has increased into a veritable tidal wave.

You *know* that the factory has been obliged to double its mammoth plant—double its production—double every facility for the production of Paige cars.

So, there is only one possible conclusion.

This is destined to be the greatest Paige year of them all.

The supremacy won last January will not only be held, but Paige cars will be even more widely recognized as the nation's true "standard of value and quality."

Perhaps you will agree with us when we contend that a Paige dealership is one of the most valuable assets in the Industry.

Prices f. o. b. Detroit	
Fairfield "Six-46".....	\$1295
(seven passenger)	
Hollywood "Six-36".....	\$1095
(five passenger)	
Cabriolet	\$1600
Sedan	1900
Town Car	2250
(Closed car bodies)	
(on "Six-36" chassis)	

THE PAIGE-DETROIT MOTOR CAR COMPANY
1252 McKinstry Ave., DETROIT, MICH.

QUAKER

Tempered Rubber

TUBES

Are Built Up
by Hand

Gray
or
Red



A QUAKER TUBE is really several tubes in one.

This because layer upon layer—each carefully inspected against defects—is built up by hand until the desired thickness is reached; then, the multiple plies of tough rubber are “welded” into a homogeneous mass.

But before the actual construction begins, the rubber is prepared for tempering by our secret formula. That is one of the principal reasons why QUAKER Tempered Rubber TUBES have such wonderful tensile strength.

In QUAKER TUBES, the “factor of safety”—the difference between bare requirement and “ultimate strength”—is greatly in excess of that of “standard” tubes.

It is the extras of rubber quality, care in building and exclusive process of TEMPERING that give QUAKER TUBES so great a “factor of safety,” and also add a like excess “factor of comfort” and “factor of economy.”

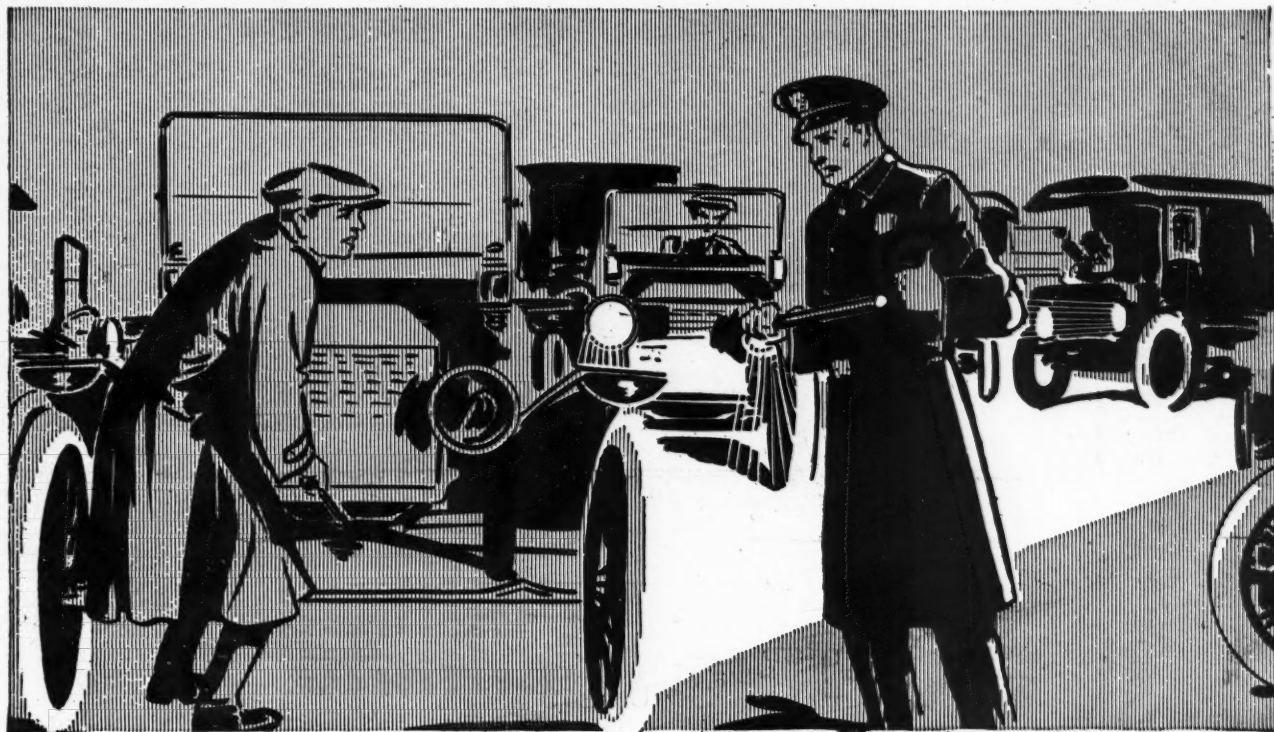
Buy QUAKER Tempered Rubber TUBES direct from our factory or nearest branch until your local dealer stocks them. Then buy from him. Address Mr. Lyons.

Dealers find our “Square-Deal” policy a business builder. Write Mr. Moore.

Quaker City Rubber Co.

Factory and Home Office **PHILADELPHIA**

CHICAGO 182 West Lake St. PITTSBURGH 211 Wood St. NEW YORK 207 Fulton St.



Stalling In Traffic \$65

with its annoyance and humiliation loses its terrors for all Ford owners who will take advantage of the opportunity and buy a

SPLITDORF-APELCO \$73 f. o. b. Pacific Coast
Electric Starting and Lighting System \$85 f. o. b. Toronto

A little foot pressure from your seat at the steering wheel and your motor starts up from the "punch" delivered by the SPLITDORF-APELCO system.

The SPLITDORF-APELCO system does away with all hand-cranking—you can start and stall as often as occasion may arise—the reliable and powerful SPLITDORF-APELCO system will always save you from holding up traffic or leaving the driving seat to start up the motor.

And your electric lighting is safe all the time with the never-failing SPLITDORF-APELCO equipment—it is *always there* for service whether the motor is running or just standing.

It is simple and easy to install the SPLITDORF-APELCO system, and Ford motor repairs can be made without disturbing the installation. You can make the installation yourself or any garage or supply man will do it for you. SPLITDORF SERVICE, too, is at your command at our branch houses, and the work of installation can be promptly attended to by our own experts.

Orders placed AT ONCE will be filled without delay



SPLITDORF ELECTRICAL COMPANY

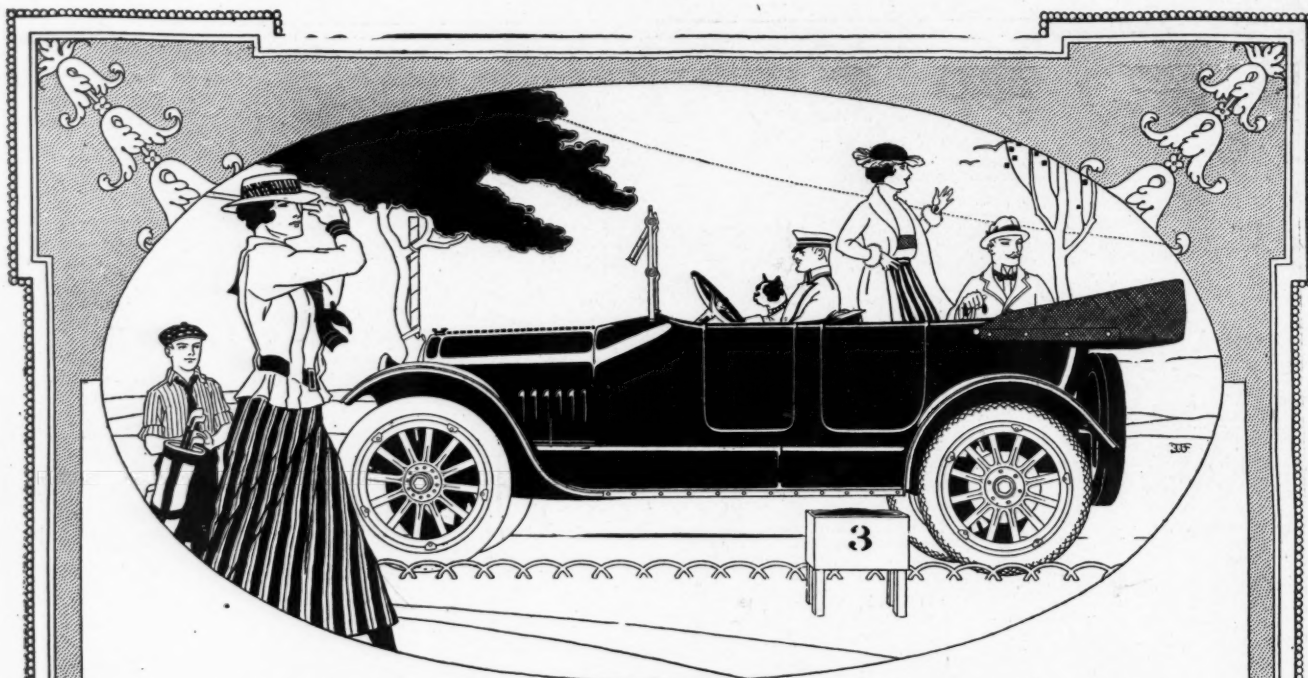
ATLANTA.....10-12 E. Harris St.
BOSTON.....1112 Boylston St.
CHICAGO.....64-72 E. 14th St.
CINCINNATI.....811 Race St.
DALLAS.....402 S. Ervay St.
LONDON

DETROIT.....972 Woodward Ave.
KANSAS CITY.....1827 Grand Ave.
LOS ANGELES.....1215 S. Hope St.
MINNEAPOLIS.....84 S. 8th St.
NEWARK.....290 Halsey St.
NEW YORK.....3-5-7 W. 61st St.

PITTSBURGH.....5941 Ellsworth Ave.
PHILADELPHIA.....210-12 N. 13th St.
SAN FRANCISCO.....1028 Geary St.
SEATTLE.....1623 Broadway
TORONTO.....469 Yonge St.
BUENOS AIRES

Factories: NEWARK, NEW JERSEY

(All SPLITDORF features are fully covered by patent or patents pending)



KING **EIGHT CYLINDER** **KING**

\$1350 **COMPLETE** **40-45** **HORSE POWER**

Too Successful to Change this Year

The extraordinary demand for this pioneer Eight and its year's mechanical advance over all competition make it unnecessary for the King Company to stimulate sales by mid-year change of price or model.

WE are fortunate in having produced a car which enables us to break away from the trade's demoralizing practice of sudden and unseasonable announcements, which cause quick depreciation of all cars purchased during the first half of the year.

Therefore, the King Company announces this new policy for the protection of King owners and dealers: No change of price or model this year. No mid-year announcements. Either ample notice to dealers of any new announcement affecting prevailing model, or, rebate on all cars still unsold which were shipped thirty days prior to such announcement. No sacrifice of King quality for mere price reduction—but always a high grade car at a price that gives big value.

The King Eight has delivered since Jan-

uary and was on the trial road three months before. It is now giving the very highest satisfaction to hundreds of owners all over America and is operating in eighteen foreign countries, there being 150 in England alone. The motor is truly an engineering marvel—a statement which will lose its boastfulness after your first ride.

Mechanically a year in advance, yet proved right by thousands of miles of operation, this car is the purchase of wisdom. It will grow old slowly. It will out-perform all other types. It will show amazing economy for its hill-leveling power. It is not "coming" but HERE—a car of demonstrated superiority and embodying a knowledge of Eight Cylinder construction which makers in our wake must learn by experience.

There's a King dealer in your locality. Write for his address and new Eight catalog.

KING MOTOR CAR COMPANY, Jefferson Avenue, DETROIT, MICHIGAN

New York Showroom, Broadway at 52d Street

"The Car of No Regrets"

FORD DEALERS:—

Stewart Speedometers Stay Sold!

WHAT GOOD TO YOU is 25 cents extra profit, if you sell your FORD customer anything but the Stewart Magnetic Type Speedometer.

Twenty-five cents extra profit from selling your FORD customers an inferior, untried, or wrong principle speed indicator will always prove **COSTLY** to YOU in the end.

Sell your FORD customers the Stewart Magnetic Type Speedometer—

**—the ONLY Speedometer
as Efficient as
the FORD Car Itself!**

If anything should ever get out of order on the Stewart Speedometer, the owner will drive at once, as a matter of course, to the Stewart Branch or Stewart Service Station for adjustment—**NOT BACK TO YOU**. He knows in that case that you have sold him the best Speedometer and that it is made and guaranteed by the largest concern in the world making Automobile Accessories. He knows that 95% of all car manufacturers regularly equip their cars with the Stewart Speedometer, and willingly pay more for it, year after year. **THEY** refuse to take chances. He knows that there are over 1,500,000 in use on cars today. He probably knew in advance that he would rather have the Stewart Speedometer, built especially for FORD CAR service, and if he let you sell him any other it was with the distinct thought in mind that he would **HOLD YOU RESPONSIBLE** if it **WENT WRONG**. And he **NEVER FORGETS** who **SOLD** him unsatisfactory equipment for his car, to make a few "QUARTERS" or "HALF DOLLARS" at his expense!

Sell the Stewart Speedometer, Model 100, which has our regular 60-mile speed indicating dial; large figures, easily read; 10,000-mile season record; 100-mile trip record, with a special device for resetting to zero or any tenth of a mile desired, and all without changing the season record; jeweled bearings; case handsomely finished in jet lacquer with brass trimmings to match the Ford Car.

**Write Our Nearest Branch
for Special Proposition**

They are able to quote you at once on the new trade discounts on this special Model 100 for Ford cars.

Stewart-Warner Speedometer Corporation

Executive Offices—1931 Diversey Blvd., Chicago
Factories—Chicago and Beloit, Wis.

15 BRANCHES—Boston, Buffalo, Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Minneapolis, New York, Philadelphia, St. Louis, San Francisco, London, Paris.

78 SERVICE STATIONS IN ALL CITIES AND LARGE TOWNS



**30 Days'
Trial**

Complete with
Special Equip-
ment for easily
installing it on
FORD Cars.

\$12



**Big Profits
Also in Selling**

Stewart
Hand-Operated Warning Signal

Most popular with all
FORD Owners of any
signal ever made.....

\$5

The Detroit Package Wagon Hits The Bulls-eye

Because it fills a need long recognized by every merchant or tradesman whose business depends on the efficiency of his delivery system—

Because it is the first full recognition of the demand for a light, serviceable, all-around delivery car from the standpoint of the commercial car manufacturer—Because it is built primarily and solely for the distinct purpose of filling the demand—

The Detroit Package Wagon Scores!

The general and successful use of the heavy type of automobile truck has made the need of a light delivery car especially apparent. Merchants in every city of the United States have tried to fill this need themselves. Pleasure cars of every type, with motley styles of delivery bodies built on, have been pressed into service. The best that has resulted has been a bunglesome, ugly, rebuilt pleasure car—not a car designed to stand the strain of strenuous, year-in-year-out delivery service and at the same time to embody in its distinctive design the prestige of the business house which uses it. How significant that the consumer has recognized the need of such a car first! What a field to push into with a car built primarily to meet the very demand the merchant has tried to fill himself with any makeshift at hand!

Utmost, exhaustively-tested serviceability is what the Detroit Package Wagon offers—service furthered by the fact that its beauty of design and finish reflects truly the stability and standing of the consumer in his community. The dealer who handles the Detroit Package Wagon will pioneer the way into a virgin field, rich in its undeveloped prospects!

\$ 690

The chassis of the Detroit Package Wagon is impressive in its sturdy, clean cut, simple design. Every part not absolutely vital to perfect, efficient working has been eliminated. From the staunch motor developing full 25 horse power to the full cantilever rear springs, every unit has been constructed to meet the absolute requirements of the designers—utmost simplicity with highest efficiency maintained. And the result is the simplest and best light commercial car chassis to be had. Rigid tests have been given this splendid chassis and it has stood without a tremor the shocks and strains of hardest driving under a maximum load.

The over size rear axle of the Detroit Package Wagon is at once the object of enthusiastic appreciation by dealers and consumers alike. Experience has taught that the rear axle has heretofore been the weakest member of light commercial car construction, particularly in the case of rebuilt pleasure cars. The rear axle of the Detroit Package Wagon

is of the full floating type with roller and ball bearings. Spiral bevel driving gears, as well as differential, are built of Chrome Nickel Steel. No person in touch with commercial car construction can deny the immense value of this especially built axle. And the rear axle is only one point where particular design for a particular use has been employed.

Three types of bodies are provided for the Detroit Package Wagon—the Standard Panel, shown in the illustration, the De Luxe Full Panel, and the Open Express. With colors optional, any merchant can obtain the exact commercial car for his requirements, and without any delay.

From chassis to body, point by point, the Detroit Package Wagon gains by comparison with any type of similar commercial vehicle, rebuilt or manufactured. It is the "well balanced car," for it is built for a particular use, with the needs of that particular use constantly in mind.

Dealers—Act Promptly to Secure Your Territory

Dealers, the Detroit Package Wagon is not a "seasonal" proposition. The virginity and immensity of the field which it is pioneering, the fact that rebuilt pleasure cars are failing to stand up, the fact that the Detroit Package Wagon is cheaper to buy and maintain than the made-over type of delivery car, all tends to show that there will be a year-round demand for this particular commercial vehicle.

Even the word-of-mouth publicity given the Detroit Package Wagon has brought in an unusual number of advance orders with strong bids for territory. This is our first announcement, and with deliveries commencing in September, we look for quick responses from a few more reliable dealers. Applications will be considered in the order of their filing, and those who wire will be given preference. Telegraph immediately if you are interested in the liveliest commercial car proposition of the 1915 year. Full descriptive literature sent on request.

DETROIT PACKAGE WAGON DETROIT

DETROIT COMMERCIAL CAR CO.

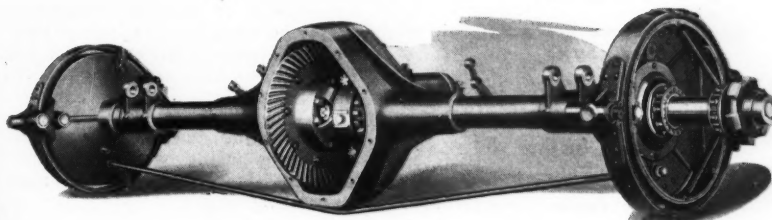
Detroit
Michigan

Specifications in Brief

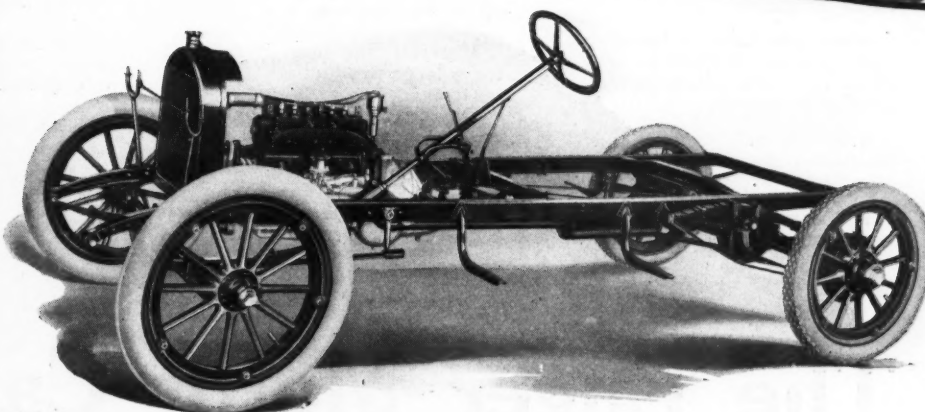
Motor—4 cylinder, cast en bloc, high speed type, bore $3\frac{1}{4}$ in., stroke $4\frac{1}{2}$ in., develops 25 h. p., crankshaft and camshaft of chrome nickel steel, especially heat treated. Carburetor—Zenith double jet type with convenient dash adjustment; gasoline tank located in cowl. Ignition—From storage battery in connection with Connecticut coil and distributor. Lubrication—Splash system supplemented by plunger pump. Cooling—Thermo-siphon, honey-comb radiator. Clutch—Multiple disc. Transmission—Ball bearing, chrome nickel steel gears, 3 speeds forward and reverse, center control. Electric starting & lighting system—Single unit system through silent chain running in bath of oil. Rear axle—Full floating type. Driving axles may be removed without disturbing the wheels. Brakes—Internal expanding, external contracting. Springs—Semi-elliptic front, full cantilever rear. Wheels—Artillery type, with quick demountable rims. One extra rim. Tires—30 by $3\frac{1}{2}$ in. Goodyear, plain front and non-skid rear. Wheelbase—106 in. Capacity—750 lbs. Instruments on dash—Stewart-Warner Magnetic Type speedometer, current regulator, and all switches conveniently grouped.

BODIES. 3 types—De Luxe full panel, standard panel, open express. Loading space in the rear of the driver's seat—60" long, 43" wide and 54" high. FINISH. Best varnish and colors obtainable, hand rubbed, standard color, rich maroon on panel bodies and London smoke brown on open express; other colors optional.

Note the distinctive beauty of the Standard Panel body.



Note the strong, over-size, especially-built rear axle.



Note the simple, sturdy construction of the chassis.

Enger Twin Six

12 Cylinders

\$1095



We Want Dealers Everywhere

Here is a twelve-cylinder motor car for only \$1095.

It has a 2½ inch bore by a 3½ inch stroke.

It is of the highly efficient valve-in-the-head type.

The cylinders are set at an angle of sixty degrees.

It has an unusually long wheel-base—115 inches.

Demonstrations are going on at the factory now.

Come down and drive the Enger Twin Six yourself.

Wire, without further delay, for your appointment.

We want dealers everywhere.

Here is undoubtedly the world's nearest approach to perfect efficiency in an automobile.

Pick out the smoothest and most quiet car that you have ever driven, and against it the Enger Twin Six is better than twice as smooth; better than twice as quiet.

Here you have a faster pick up; greater flexibility and a more perfectly balanced flow of abundant power.

Step on the throttle and instantaneously you sail from a standing start to racing speed.

All vibration and noise have been completely eliminated.

In short, here is a degree of silence, speed and power which cannot be obtained in anything but a Twelve-Cylinder car.

And the price is only \$1095!

Understand, when we put a car on the market we stand behind it just as Packard or Ford would. We have the financial strength to back this up. We have just as much at stake. Our reputation is just as valuable. Refer to Dun or Bradstreet and you'll probably be surprised to find that we have the same rating as Packard and Ford.

This model is the direct result of a long period of careful preparation, designing, testing and experimenting.

Nor are we announcing a car as many other manufacturers have done, that is only in the blue print stage.

Production is already under way.

We are tuned up and tooled up to do business.

Material has been purchased for a large production.

Demonstrators can be delivered to dealers in a few weeks. Cars in quantities will follow shortly.

But first we are allotting territory. We want substantial and

financially sound dealers in every city.

We want dealers everywhere.

We have a marketable product, which we can start deliveries on shortly and are in a position to do immediate business with responsible men.

We have started allotting territory. Immediate action on your part is essential.

Nor is the sole feature of this car the twelve cylinder motor. We have not taken an old chassis and body and dropped a new motor in it.

This model is a brand new design from start to finish.

The body design is patterned after the \$3000 designs. Here you have real stream lines—no sharp edges—every corner perfectly rounded. Taste, grace and harmony is displayed throughout.

This smart model is finished in dark Brewster green.

It's a beauty!

Remember—a thoroughly high grade twelve-cylinder car for only \$1095!

Come down and drive this car yourself.

Quick action is imperative if you want early deliveries. Telegraph us now.

Literature on request

The Enger Motor Car Co.

Cincinnati, Ohio

Enger Twin Six

12 Cylinders

\$1095

Brief Specifications

Motor

Twin Six (12 cylinders) cast en bloc. Angle of cylinders 60 degrees from center line, $2\frac{5}{8}$ " bore, $3\frac{1}{2}$ " stroke. Valve in the head motor. Construction of motor allows for removing head.

Ignition

Automatic and manual advance, Atwater Kent.

Wheelbase

115". Road clearance 10".

Electric Starting and Lighting System

Electric motor meshing in fly wheel gear for starting.

Carburetion

Generator—direct drive.

Double entrance carburetor with manifold hot water jacketed.

Springs

Cantilever.

Transmission

Three speeds ahead, one reverse.

Clutch

Multiple disc. Dry plate.

Rear Axle

Pressed steel housing. Spiral bevel gears. Withdrawable wheel shaft.

Cooling System

Thermo-syphon.

Control

Center.

Tires

Wheels equipped with demountable rims and 32x4 tires, non-skid on rear.

Color

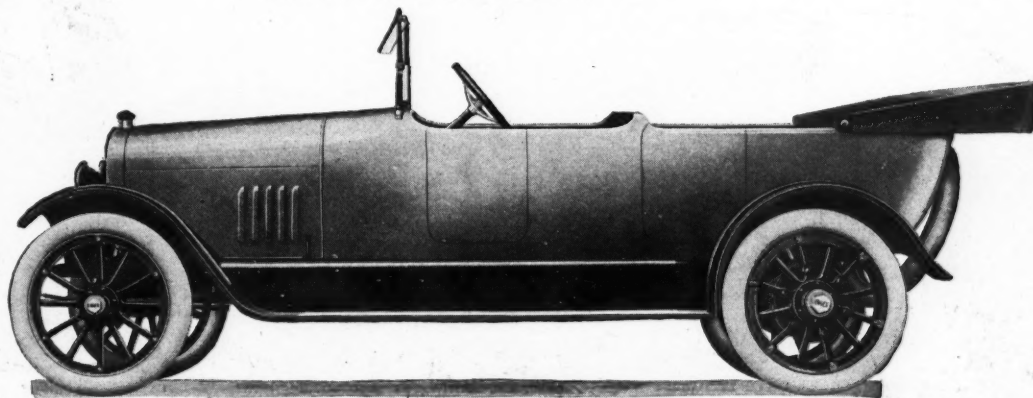
Body is a dark Brewster green.

Weight of Car

2485 lbs., fully equipped with top, windshield, battery lamps, starter, magnetic speedometer, tools and extra rim.

Price

1095 f. o. b. Cincinnati.



This reproduction is from an actual photograph

The Enger Motor Car Company, Cincinnati, Ohio

Greatest Victory Ever Won at Elgin!

First and Second Places Both Days

Again a Stromberg-equipped Stutz has triumphed in speed—in power—in service and endurance. Triumphed in both 300 mile Elgin Road Races over the greatest American and foreign cars in two of the most hard-fought and spectacular auto races ever held at Elgin. All records were broken—and the Stromberg-equipped Stutz did it!

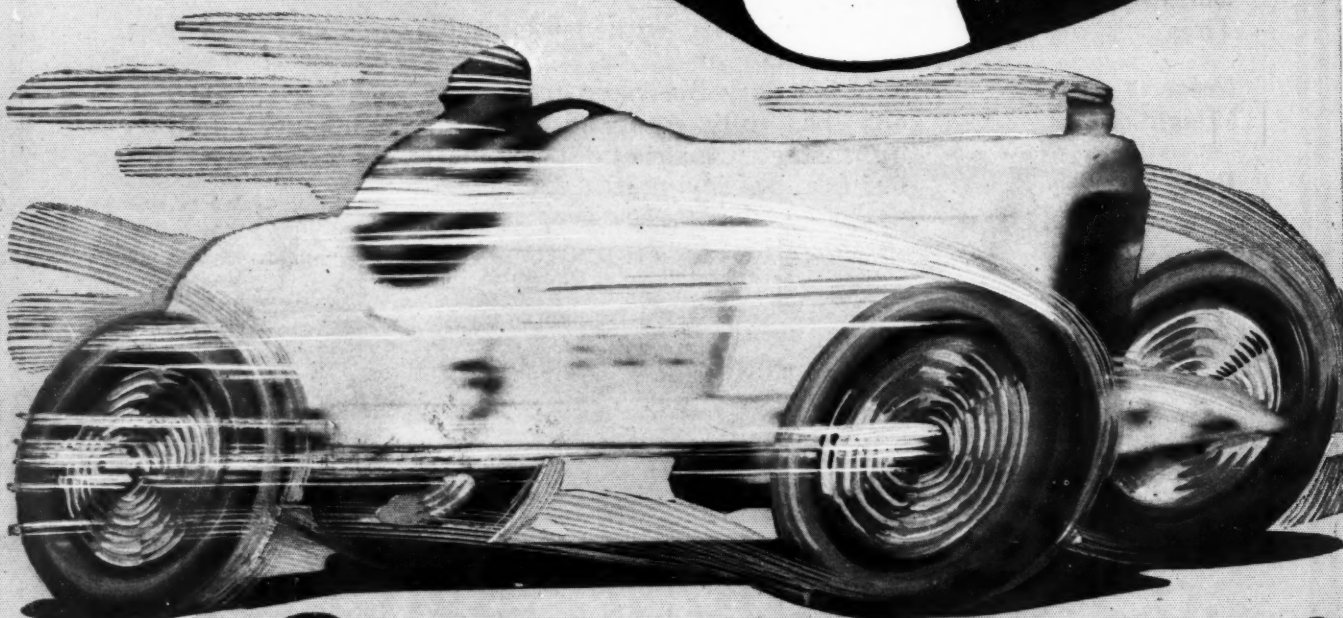
Each day 300 miles of dangerous curves and hills—300 miles of unmerciful Carburetor abuse—300 miles of terrific grind where only wonderful Carburetor acceleration, flexibility and endurance could have survived and won. On the first day the Stromberg-equipped Stutz with Cooper at the wheel came home the winner in the amazing time of 4:01:32—an average speed of 74.97 miles per hour. Anderson was a close second with an average speed of 73.85 miles per hour. Then Stromberg superiority was brought home even more conclusively when in the second day's race Anderson shot over the tape first in a Stromberg-equipped Stutz in 3:54:25—averaging 77.25 miles per hour. In this race Cooper won second place, averaging 76.25 miles per hour.

The New Stromberg Carburetor has long held the world's official A. A. A. records for speed—power—flexibility—acceleration and economy.

The New Stromberg Carburetor used on Stutz racers is of the same design as those furnished all cars. It is not necessary for Stromberg to make special Carburetors for racing cars—the regular models are flexible enough to meet every demand.

WRITE US NOW for certain new facts about Carburetors—let us tell you how to save money on your gasoline bills—get greater service and satisfaction. Be sure to state name, model and year of your car.

Stromberg Motor
Devices Co.
Dept. G
64 E. 25th St.
Chicago



New STROMBERG Does it! CARBURETOR

When Writing to Advertisers, Please Mention Motor Age

STROMBERG Equipped Stutz Wins Both Elgin Races!



New **STROMBERG** Does it!
CARBURETOR

When Writing to Advertisers, Please Mention Motor Age

THE NEW SERIES

Genemotor

Trade Mark

THE General Electric Company announces a New Series Genemotor, now ready for delivery.

It is much more efficient than the original model which attained leadership in 90 days.

Two important new features—a double-point contact relay and a flexible driving pinion—establish the New Series Genemotor on a new basis of supremacy.

They provide against the misuse of the Genemotor in the hands of the novice and make doubly sure long and continuous service.

To the big distributor or to the small dealer the New Series Genemotor now means a big Fall season, particularly in view of the new conquest of the Genemotor in winning.

**THE
GOLD MEDAL
AT THE
PANAMA-PACIFIC
INTERNATIONAL
EXPOSITION**

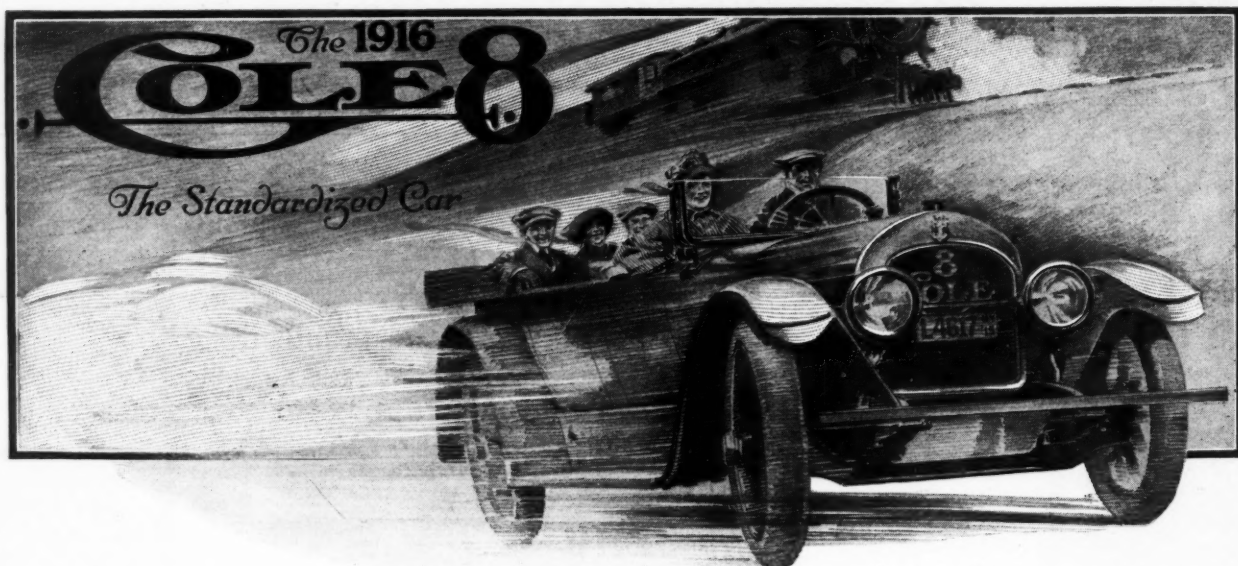
This is a distinction which has an important bearing on sales, for all the world loves a winner.

A merchant, they say, is known by the goods he sells. Why not sell the best?

If you are not now handling the Genemotor, please write us.

Distributors Everywhere

A·J·PICARD & CO
1720-1722 BROADWAY, NEW YORK



Cole "Eight" Beats Out the "Empire State"

Under this caption, a full-page advertisement will appear in the Saturday Evening Post for September 4th. Look for it.

And remember, when you read it, that more than 2,000,000 other people will see it—and read it—and talk about it—for it tells of one of the most remarkable feats ever performed by a motor car.

It is just such feats as this, performed by Cole 8's in the hands of owners, that have led hundreds to buy this remarkable car.

Cole 8 is selling on its performance. It is out-demonstrating its rivals everywhere.

That's why our dealers are cashing in on Cole 8—**STRONG.**

The price of the Cole 8 is \$1785, f. o. b. factory.

Cole Motor Car Company, Indianapolis, U. S. A.

Builders of the Standardized Car

The 1916 COLE 8

The Standardized Car

Feats Like These Make Easy Sales

An impromptu brush between the Empire State Express and a Cole 8 took place on May 19, 1915, near Buffalo, N. Y. E. H. Baker, of Buffalo, while on a pleasure trip, accepted the unspoken challenge of the train and won. Not satisfied with this trial he returned on June 13, prepared for a harder test. He won again. To make a living, positive record of the occurrence, he was accompanied on his second race by a moving picture operator, in another Cole 8, who photographed the two participants in action. The race will be reproduced in the leading picture theaters of the country.

* * *

It was another Cole 8, driven by A. W. Eaton, of Denver, Colo., that made the 320 hazardous miles from Denver to Glenwood Springs, Colo., through the heart of the Rockies, up grades as steep as 22½ per cent. and ranging in altitude from 7,500 to 10,000 feet, in the remarkable time of 11 hours and 50 minutes—2 hours and 10 minutes faster than the regular passenger train schedule. Less than 2 quarts of oil and 22 gallons of gasoline were used for the entire trip.

* * *

A Cole 8 owned by Edgar W. Finn, of Babylon, Long Island, in a trial spin on the Long Island Motor Parkway, showed a speed range in high gear of 1½ to 74 miles an hour with the top and windshield down, carrying the driver and three passengers. After running 1645 miles, Mr. Finn found that only 1 quart of oil and 1½ pints of water had been consumed. Mr. Finn reports an average mileage of 17 miles to the gallon of gas.

Any Cole Eight Can Duplicate Them

Every one of the feats here described was performed by an amateur driver in a Cole 8, out of stock, without any special preparation. Others quite as remarkable are being performed in all parts of the country. They are within the power of every Cole 8 that leaves the factory.

That's why our dealer list is the biggest in our history—why more dealers have been contracted in advance than ever before—why our dealer organization is increasing by leaps and bounds.

Cole 8 makes easy sales because it has the good looks, magnificent road qualities, refinement of appointments, unapproached economy, and more power than you'll find in any other car—bar none. The price of the Cole 8 is \$1785, f. o. b. factory.

Any territory is virgin territory for a car that performs like the Cole 8, and some of it is still open for the right kind of dealers. Write us today for our proposition.

Cole Motor Car Co., Indianapolis, U. S. A.
Builders of the Standardized Car

Continental World-Famous Simplicity



Stripped of all superfluities, with clean-cut lines denoting native speed and strength, the Continental motor makes an instant appeal by its superb simplicity.

Continental Motors

Long experience has eliminated from its design any suggestion of the uncouth, the crude, the needless. Its lines are the lines of beauty, as well as power. Its proportions are those not only of harmony, but also of correct balance. Its structure reveals the simple dignity of strength.

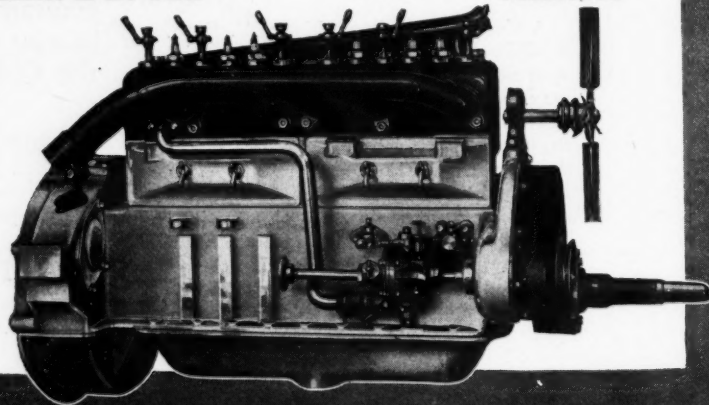
Continental simplicity goes far to account for Continental satisfaction; it assures readiness of control and adjustment, freedom from trouble, ease of repairs. Even the uninitiated can read the promise of the trim lines and fine proportions of this motor; the expert appreciates its masterly design. To both its simplicity is the mark of its merit.

Let Continental Simplicity point
YOUR way to motor satisfaction
in your next car or truck.

CONTINENTAL MOTOR MFG. CO.
DETROIT, MICHIGAN

Largest exclusive motor
builders in the world

Factories
Detroit
Muskegon



\$ 985



\$ 985

"6—42"
Fully Equipped

**Continental
Motor**

Forty Years in the Making

For 40 years we have been in the manufacturing business—building up the prestige and laying the foundation on which the 1916 Paterson "6-42" is built.

The most carefully trained engineers are responsible for its new mechanical perfection—the highest-priced artists for its racy design.

The true boat-type streamline body blends into the tapering hood and curved front radiator in the very latest and most graceful variation of the prevailing 1916 mode.

The Continental Motor—standard equipment—insures perfection under the hood, and typifies the quality of the entire car. It is easily the leader of its class, regardless of price.

Regularly equipped with one-man top, quick adjustable curtains, ventilating rain-vision windshield, speedometer, electric dash light, extra demountable rim, tools, etc.

Disappearing auxiliary seats, \$75 extra.

Specifications: 6 cyl. Continental Motor, L head, en block, bore 3¼, stroke 4½. Cone clutch. 3 speed gear set. Electric starting and lighting. 117-inch wheelbase. 32x4 tires. Wood wheels. Left side steering, center control. Floating type rear axle.

NOTE: We also continue our popular four cylinder "4-32."

Write for Illustrated Catalogs

Liberal Proposition for Dealers

Wire for information on good territory unallotted

W. A. PATERSON COMPANY, Flint, Michigan

Members National Automobile Chamber of Commerce



A Speedometer for Ford Cars That Is the Acme of Simplicity, Accuracy and Convenience.

We have utilized the well-known centrifugal principle, recognized as the most accurate means of recording a car's true speed, and by exhaustive experimentation produced a speedometer that represents final perfection. This instrument is now ready for your new Ford. You can see it at your dealer's. You will want it not only for its positive, unalterable accuracy but because it has many added refinements as well.

JOHNS-MANVILLE Speedometer

Chief Among Its Many New Features Are:

1st A 3-weight Centrifugal Governor that enables this instrument to register with positive accuracy at even low speeds and which eliminates all vibration in the indicating hand.

2nd A large speed scale marked with big, clean-cut figures, which are clearly visible from the tonneau of the car and so designed that it is impossible for the indicating hand to get in front of the Odometer figures and thus interfere with reading.

5th An entirely new type of construction which has reduced the number of units to three, namely the cup or body—the frame to which is assembled the Centrifugal governor—and the Odometer movement which is entirely separate. The entire mechanism of the new Johns-Manville Speedometer can be readily lifted out of the cup for inspection and replaced in a few minutes.

3rd An Odometer movement that is practically fool-proof and one in which it is impossible for the indicating wheels and index gears to get out of alignment—a common fault with most odometers.

4th A Trip Odometer fitted with a wheel reset which enables the car owner to reset the trip mileage to any figure by simply turning the reset wheel.

Back of this new Johns-Manville Speedometer is Johns-Manville Service. No matter where the car owner goes, he is never far from a Johns-Manville Service Station. He is never embarrassed by long delays in getting new parts accidentally broken or in enlisting the expert coöperation and advice of Johns-Manville Service men. Don't buy any speedometer until you see this new Johns-Manville instrument. Ask your dealer and if he cannot supply you, write nearest J-M Branch at once.



Price

\$12
COMPLETE
With All Necessary
Fittings



Real Freedom from Gasoline Feed Trouble Is Now Assured

Every car owner can have positive, automatic gasoline feed on any grade at any speed if he equips with the new

Carter Automatic Gravity Gasoline Tank

Completely eliminates every phase of trouble connected with pressure feed and all the other various forms of gasoline feed in use today.

Insures an absolutely positive, uniform flow of fuel to the carburetor, no matter how steep the grade, without pumping air pressure into the main tank—without keeping your eye on a pressure gauge—without any of the difficulties attached to pressure feed.

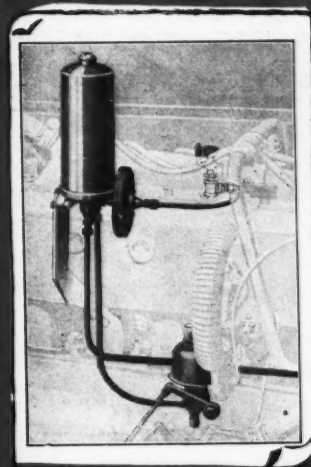
Works automatically and supplies an increased amount of fuel in direct proportion to the increased speed of the engine, always enough for the engine's needs.

There is never any need of pumping gasoline to the carburetor in order to get started. There is never any danger of forcing too much gasoline through the carburetor. There is never any possibility of wasting fuel.

The Carter system is simplest in design. It has only three moving parts. It is actuated by the suction and compression in one cylinder and is easily connected to the nearest pet-cock hole without the removal of the pet-cock.

The Carter Automatic Gravity Tank on a car means final riddance from all gasoline feed troubles. Look for the Carter name and the tank you buy.

H. W. Johns-Manville Co.



Price

\$10

COMPLETE
with All
Fittings

Service Branches

Akron	Louisville
Albany	Memphis
Atlanta	Milwaukee
Baltimore	Minneapolis
Birmingham	Newark
Boston	New Orleans
Buffalo	New York
Chicago	Omaha
Cincinnati	Philadelphia
Cleveland	Pittsburgh
Columbus	Portland
Dallas	Rochester
Dayton	St. Louis
Denver	St. Paul
Detroit	Salt Lake City
Duluth	San Francisco
Galveston	Seattle
Houghton	Syracuse
Houston	Toledo
Indianapolis	Washington
Kansas City	Wilkes-Barre
Los Angeles	Youngstown

THE CANADIAN H. W.
JOHNS-MANVILLE CO.,
LIMITED, Toronto, Mont-
real, Winnipeg, Vancouver





THIS TUBE IS DISTINCTLY BETTER THAN MOST TUBES : : : :

NATIONAL Special Red Tubes are "specially" made for motor-wise men who appreciate the uninterrupted service and economy of hand-built, Up-River Para Tubes.

After all, there is no economy in using cheap tubes. More tires are ruined through cheap, slow-leaking tubes than through any other cause. Yet even a cheap tire will give good service when it contains a tough, non-porous tube.

National Tubes represent the utmost in tube construction. They are built entirely of Up-River Fine Para—by hand. They are built up of many thin layers, instead of one thick sheet, for microscopic flaws, air pockets and bubbles go undetected in thick sheets of rubber. You will never have trouble with the valve patch—the greatest source of tube trouble—for there is no valve patch. The valve base is vulcanized *into* the tube, so that it becomes an integral part.

If you have yet to try a National Tube order one today. If there is no dealer in your town, place your order direct. National Tubes are guaranteed non-porous and proof against deterioration for one full year.

National Rubber Company

Factories and Main Offices

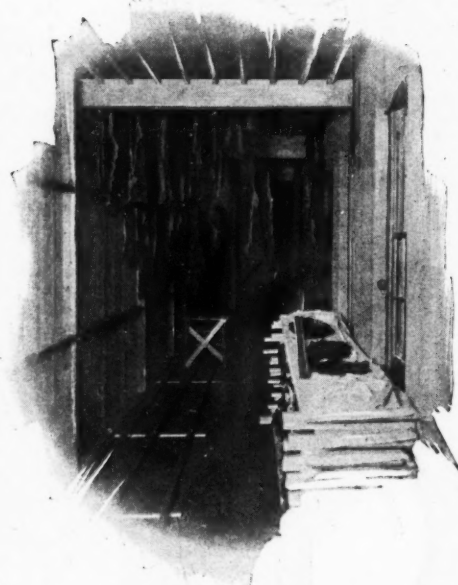
Pottstown Pa.

LOFT DRYING

After pure Para rubber has been washed and sheeted it is next necessary to remove from it every particle of moisture. This can be accomplished in two different ways. One is by means of the vacuum process, which is the quickest but by no means the most satisfactory, for it leaves the rubber soft and sticky and does not improve its natural properties.

The other method is that of slow loft-drying. This consists of hanging the sheets of raw rubber in a hot, dry room, which is kept at a uniform temperature in which the air is kept in constant motion by huge fans.

In the National Factory four weeks are taken in which to thoroughly loft-dry the gum. This process brings the raw rubber to its highest point of natural strength and resilience.



DEALERS:—Write for information about exclusive territory, terms, discounts, sales helps, etc.

Atwater Kent

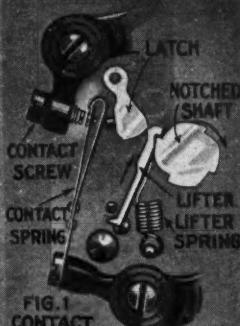


FIG. 1
CONTACT
OPEN

The lifter as it is pulled forward by the notched shaft does not touch the latch, and the contact points remain open.



FIG. 2
CONTACT
STILL OPEN

The lifter, reaching the point where it rolls off the notched shaft is pulled back by the lifter spring, striking the latch as it returns.



FIG. 3
CONTACT
MADE

The latch, being struck by the lifter, presses against the contact spring and closes the contact points for a brief instant, immediately opening after the lifter passes.



FIG. 4
CONTACT
BROKEN

The latch and lifter, having returned to their original position, are ready for the next spark.

The one Ignition System that works on the "open-circuit" principle--as simple and easy to understand as your door-bell or electric-horn.

Electricity flows through your door-bell circuit only when someone pushes the button and "closes the circuit" to do the work of ringing the bell.

Now, just imagine in place of the bell a coil which produces a hot spark each time it receives an impulse of current, and in place of the push button, the contact-maker of the Atwater Kent System. You will then understand the principle on which the Atwater Kent System works. By means of the contact-maker the ignition circuit is momentarily closed and instantly opened for each spark.

Owing to the fact that it is impossible to stop the motor in any position which will leave the ignition circuit closed, the Atwater Kent System is fundamentally safe, and no accessory safety devices are necessary to protect the battery. The current flows only during the brief instant of each spark and the ignition switch is practically useless except in stopping the car. In other words, it might be left in the "ON" position permanently without the slightest danger of draining the batteries.

The Atwater Kent principle is absolutely unique among ignition devices. Its success is certified by more than nine years of uninterrupted growth. It is in use to-day on upwards of 200,000 cars and is endorsed by more than 30 reputable manufacturers and over 10,000 dealers, garages and repairmen.

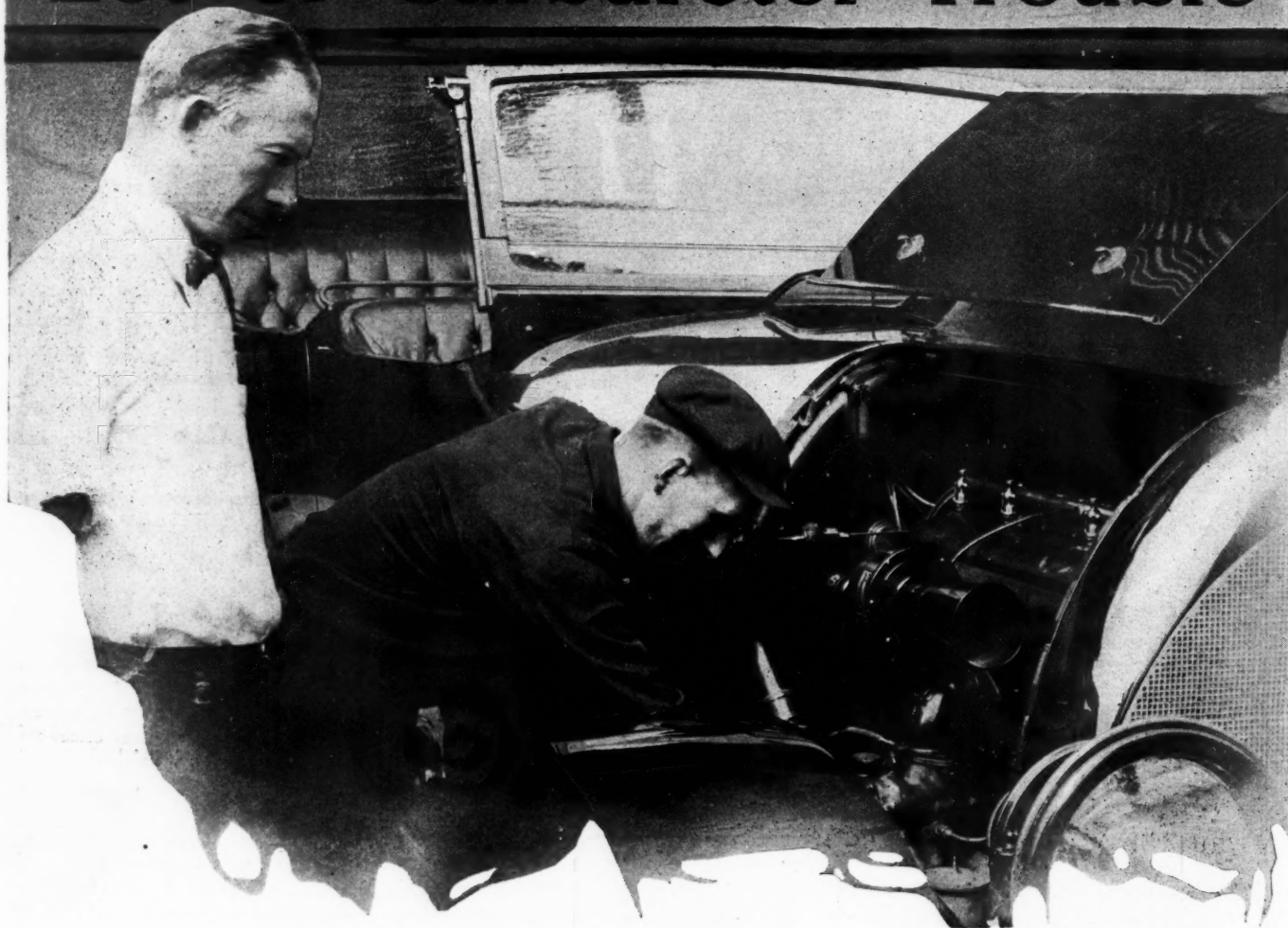
The Atwater Kent magneto replacement system can be easily installed in place of the magneto on any standard car. Thousands upon thousands of car owners, realizing the benefits of Atwater Kent Ignition are installing this system on cars previously equipped with magnetos and other types of ignition.

Our special outfit for Fords deserves the investigation of every owner of this remarkable car, and the opportunities which it offers to dealers, garages and repairmen are attracting the attention of the entire trade.

If you are not fully posted regarding this wonderful system by all means get in touch with us without further delay. You owe it to yourself to have our complete data on file.

Atwater Kent Mfg. Works
4934 Stenton Avenue, Philadelphia, U. S. A.

Connecticut Automatic Ignition Obviates a Lot of Carburetor Trouble



The carburetor is a passive instrument which works with the motor—ignition is an active mechanism which gives the motor life.

With anything like proper adjustment any carburetor works far better at high speed than at low speed because (due to the increased suction at high speeds) the gasoline is broken into smaller particles, making a more explosive mixture.

Because its spark grows hotter as speed decreases,

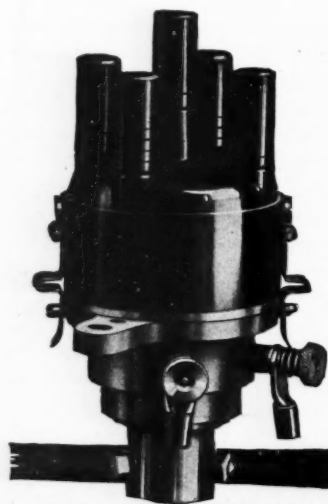
AUTOMATIC · IGNITION CONNECTICUT

makes up for what may seem like a loss of efficiency by the carburetor.

This, among many other things, is the reason why you will have a better running motor with a greater range of efficiency with CONNECTICUT AUTOMATIC IGNITION than with any other.

CONNECTICUT TELEPHONE & ELECTRIC CO., Inc., Meriden, Conn.

Ford Dealers—Write for information regarding Connecticut Automatic Ignition for Ford Cars—A. J. Picard & Co., Sole Agents, 1720 Broadway, N. Y.



A Chicago automobile dealer says:

The use of Hyatt Quiet Bearings in our cars is invaluable to our salesmen for they are able to dispose of the bearing question quickly and convincingly, merely by mentioning that "Hyatt Quiet Bearings are used."

HYATT

ROLLER BEARINGS



DODGE BROTHERS ROADSTER

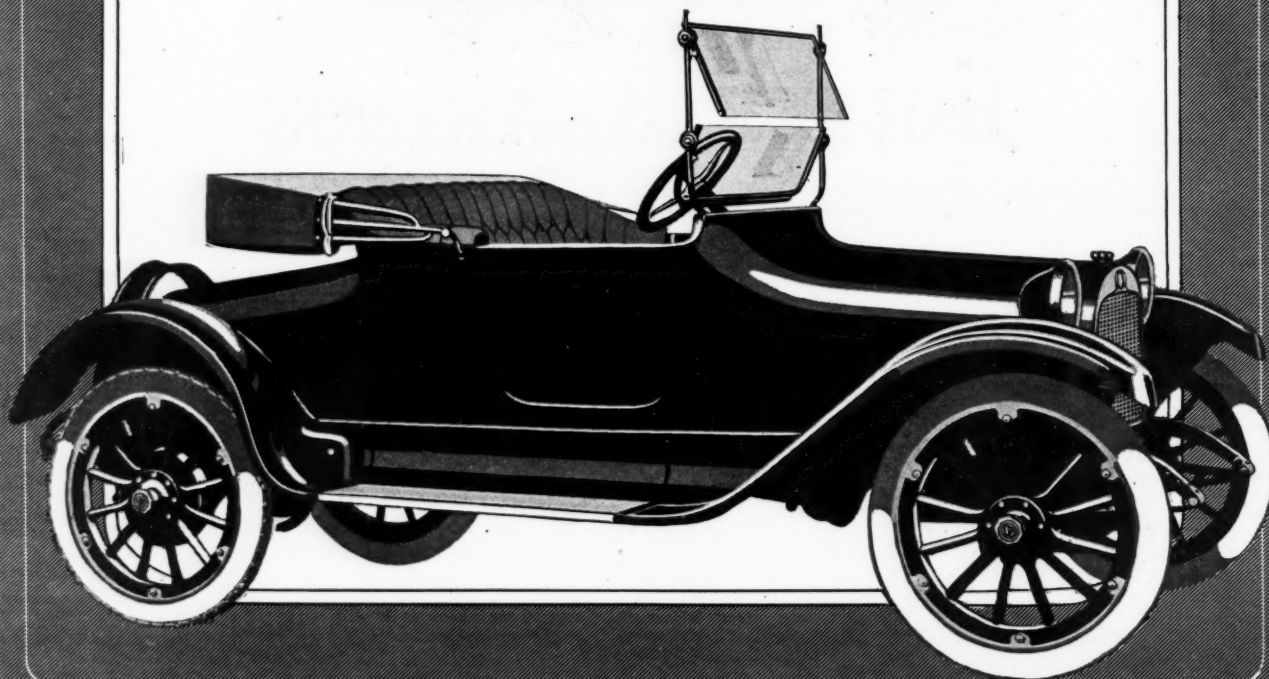
Utility was not sacrificed in order to secure a dashing design—nor was the design slighted in order to attain the practical.

The luggage space at the rear is extraordinarily large, and the seats unusually wide, deep and generous.

But, as you will see, these results have not lessened, but enhanced, the beauty of the car.

The wheelbase is 110 inches
The price of the Roadster or Touring Car
complete is \$785 (f. o. b. Detroit)
Canadian price \$1100 (add freight from Detroit)

DODGE BROTHERS, DETROIT



STUCK!



Through Loss of Traction Due to the inefficient old style bevel gear Differential

Familiar picture isn't it? And ten times the **power** wouldn't make any difference. It's not power that's needed here so much as **traction**. Don't blame the engine when you stick in the mud—blame the old style bevel gear differential.

Why continue to use a differential that only pulls one wheel—that carries your engine power to the wheel that has the **least traction**? And yet car owners and car manufacturers have had to be content with this type of differential for 15 years.



"Pulls Both Wheels"

U. S. Patents 1090082, patents in foreign countries.
All infringements will be prosecuted.

The M. & S. Differential is made for Car Manufacturers by the Brown-Lipe-Chapin Co. of Syracuse, the world's largest makers of differentials.

The M. & S. is a spiral gear differential which distributes the engine power smoothly and evenly to **both** wheels.

When one wheel loses traction in mud, sand or on slippery pavements the **power goes to the wheel which has traction**. When both wheels finally find traction, the power is equally distributed. This is due to the action of the spiral gears which act automatically in the same manner as a differential lock and give all the advantages of a solid axle.

Read what "Jeffery" says

.....

During all our tests M. & S. differential never failed to work entirely satisfactory. We find that anti-skid devices are unnecessary when cars are equipped with your differential, which in itself is sufficient to warrant its use on a car and will be quickly appreciated by the public once it is demonstrated.

Furthermore, the feature that the power is applied to both wheels at all times, will take the car through roads that it would be impossible to pass through with an ordinary differential.

We are very much pleased that we were of the first to whom this new invention was submitted and that we made the test early enough so that we could get this equipment on our "Quad" for 1914 and 15.

THE THOMAS B. JEFFERY CO.

L. H. Bill

Ass't Gen'l Mgr.

Ford Cars First

The M. & S. is built and supplied as "equipment" for any new car by the Brown-Lipe-Chapin Co. The demand for the M. & S. by manufacturers so taxes the factory that it is only possible for us at this time to take care of **replacements** on Ford Cars.

The M. & S. is a **real gear differential**—not a pawl and ratchet device which drives the slow wheel only. Its construction is mechanically correct and is based on a true scientific principle.

We are now making deliveries of the M. & S. special type for Ford Cars. Ford owners can replace their present bevel gear differential. Any mechanic can install the M. & S. in a few hours. It fits perfectly in the Ford housing, using the Ford ring and pinion gears.

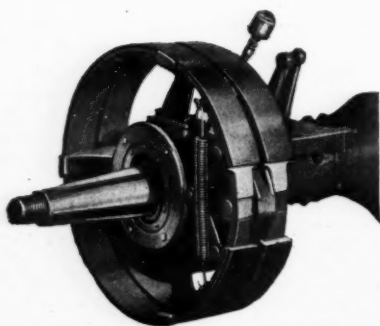
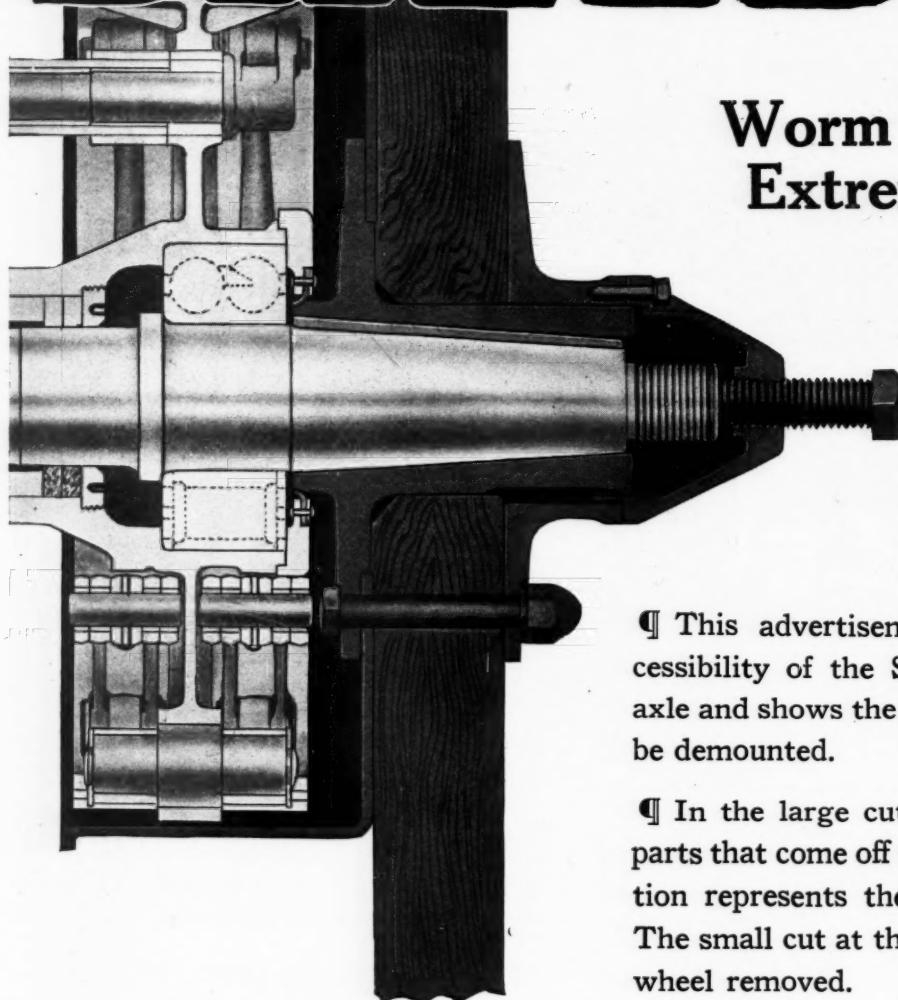
Nickel-steel Ring and Pinion Gears, standard ratio for Ford cars, price \$6.50.

Write us for full particulars—We have an attractive agency proposition for Ford dealers or any one in a position to take care of replacements.

M. & S. GEAR COMPANY, 1036-1042 Whitney Bldg., DETROIT, MICH.

SHELDON

**Worm Gear Axles are
Extremely Accessible**



¶ This advertisement illustrates the extreme accessibility of the Sheldon semi-floating worm gear axle and shows the ease with which either wheel may be demounted.

¶ In the large cut the dark portion represents the parts that come off in demounting while the light portion represents the parts that remain on the axle. The small cut at the bottom shows the axle end with wheel removed.

¶ To demount a Sheldon wheel, remove hub cap, take off wheel retaining nut, replace hub cap and insert wheel removing stud as shown in illustration. A few turns of this wheel removing stud and the demounting is completed.

¶ Note that, when wheel has been removed, the bearings remain undisturbed and protected in their housing upon the axle shaft.

The Sheldon Axle & Spring Company

Wilkes-Barre

Makers of Springs and Axles for Heavy Duty Service for More Than 50 Years

Chicago:
122 S. Michigan Blvd.

Detroit:
1215 Woodward Ave.

San Francisco:
444 Market St.

Pennsylvania

"Exhibiting Section 16, Transportation Building, Panama - Pacific Exposition, San Francisco."

When Writing to Advertisers, Please Mention Motor Age



Now Try It In Your Motor Boat

IF you have tried Texaco Motor Oil in your automobile, you already know the splendid results it gives.

No matter what kind of a motor you use it with, it is always the same with Texaco Motor Oil. Use it on your aeroplane, your motor boat or your automobile. You will have a smooth, easy-running motor. You will get the maximum power. You will get increased mileage. You will be rid of carbon and gumming trouble forever.

Order from the nearby Texaco service station. You can get it in 1 and 5 gallon sealed cans.

Motor Miles should be read by every motorist or owner of a motor boat. Send for your free copy today.

THE TEXAS COMPANY
New York



TEXACO MOTOR OIL



The Staude attaches to any make of automobile. The pure amber glass protects the eyes of the driver from all bright and glaring lights.

THE STAUDE GLARE STOPPER

The Staude Glare Stopper is one of the fastest selling motor accessories of the year. It solves the headlight problem from the right end.

Every driver needs all the light he can get on the road.

RETAIL PRICE

\$2.50

The Staude protects the driver's eyes from blinding headlights, yet in no way impairs the view of the road. It dissects the light rays and eliminates the glare.

The beautiful, rich, amber colored glass, 6 7/8 inches in diameter, looks fine and lends tone to any car.

The Staude is not "tinny" looking, and you know amber colored glass will not fade or curl like celluloid.

Most up-to-date dealers carry the Staude Glare Stopper, or we will send you one parcel post C. O. D.

The Staude is sold with a lasting absolute guarantee. If you are not delighted with the Staude and convinced after using it that it is indispensable to you, return it and your money will be refunded.

DEALERS

Our quantity discounts for jobbers and dealers allow you a good margin of profit. The Staude means quick turnovers.

Write us.

E. G. Staude Manufacturing Co.
2675 University Avenue St. Paul, Minn.

Dear Sirs:

Please send me by Parcel Post, C. O. D. \$2.50 prepaid, one complete

STAUDE GLARE STOPPER

with the understanding that I may return it, if unsatisfactory, and get my money back.

Make of car.....

Name

Address

City..... State.....

Guaranteed for 10,000 Miles



BRICTON Pneumatic Tires are guaranteed for 10,000 miles and under a specific 10,000 mile written service guarantee. What more can you ask of a tire? With Bricton Tires, punctures, blowouts and rim-cuts are eliminated—they are proof against ruts, oil and gasoline. Resilient and easy riding, too.

Try Them at Our Risk

Give Bricton Tires a free trial on your own car. Put them to test at our expense. Find out why Bricton Tires sales are increasing daily.

Your Tires Rebuilt the Bricton Way

If the fabric in the tires now on your car is in good condition, we can take them and make them proof against rim cutting, punctures, blowouts, sidewall breaks, skidding, ruts and oil and give you thousands of miles of additional service.

Write today for full information about Bricton Tires. Tire Rebuilding and details of our liberal Free Trial Offer.

THE BRICTON MFG. CO.

1235 Bricton Bldg.,

Brookings

South Dakota

Bricton Pneumatic Tires

HEINZE

Electric Horn

Special for Model T Fords

The HECO is the first and only electric warning signal made to fit the requirements of Model "T" Fords. Operates direct from flywheel magneto. Made with least number of parts. Consumes little current. Always responds instantly to touch of switch. One finger is enough.

Dealers—HECO sends the bulb horn and other warning signals for Fords, to the scrap heap. Every Ford owner wants a HECO. Liberal discounts. Big sales. Write for descriptive literature.

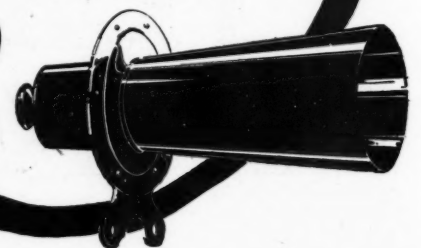
HECO gives loudest clearest warning. As strong as most expensive signals. Under hood type. Latest style. No up-keep expense. At a price you can afford. Price \$3.50, complete with cable-switch and attachments.

Sales Office:

HEINZE ELECTRIC CO.
DETROIT

Factories: Lowell, Mass.

\$3.50



Branches:
New York
City, 1876
Broadway.
Chicago, Ill.,
1256 Michigan
Ave. Minneapolis,
Minn., 33 S.
11th St. New Eng-
land Agent, Arthur P.
Homer, 154 State St.,
Boston, Mass.

When Writing to Advertisers, Please Mention Motor Age

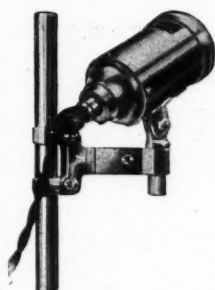


The searchlight is today one of the most needed accessories

No wonder, when you consider the limitations of the best headlight—light straight ahead only.

Every motorist recognizes the need for a lamp that gives light at the side and rear, and beyond the range of the headlight. To put a Pittsburgh Dirigible Searchlight on a car for a trial is the same as making a sale.

Dealers everywhere find a big demand for this neat and powerful little lamp.



One Reason Why the Pittsburgh Dirigible Is a Big Seller.

It is neat and attractive in appearance on the windshield.

Length 6 inches
Diameter 2½ inches
Finish full nickel

Price \$8.00 complete

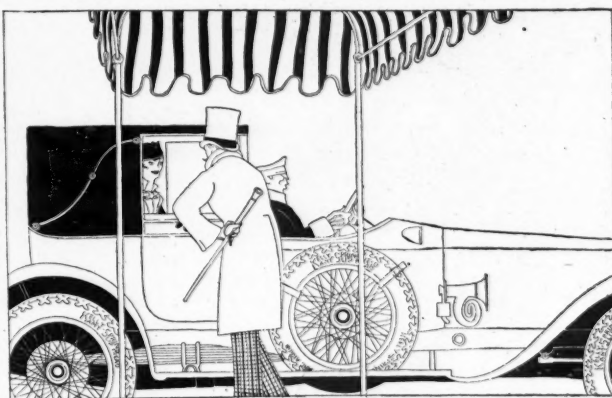
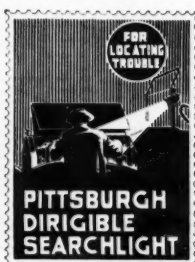
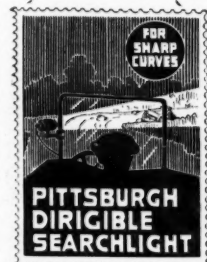
Every Pittsburgh Dirigible that goes on a windshield makes additional sales for some dealer. Display it in your window and you will get the business.

If you have never handled a searchlight, now is the time to add a quick seller to your line. Write today for price list and discounts. Refer to Catalog No. 3600.

Pittsburgh Electric Specialties Co.

Automobile Lamp Department
Pittsburgh, Pa.

Manufacturers of searchlights for automobiles, motor trucks, motorcycles and motor boats.



A Magic Carpet

A good motor tire is a magic carpet to whisk you swiftly and comfortably where business calls or pleasure waits. It should never destroy the magical illusion by intruding upon you its own mechanical personality. The instant a tire calls attention to itself it ceases to be a good tire. And the best thing we can say about

Kelly-Springfield

Tires is that you scarcely ever have to think about them.

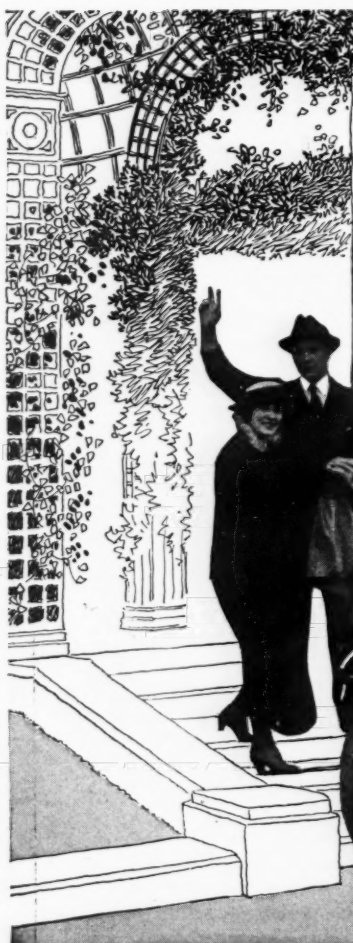
It is a matter of record that ninety-nine per cent of Kelly-Springfield Tires run their full mileage without the slightest necessity for adjustment. It is this fact that permits the following very liberal basis of adjustment in the rare cases where adjustments are required:

*Plain tread, 5,000 miles; Kant Slip, 6,000 miles.
In Ford sizes, Plain tread, 6,000 miles; Kant Slip, 7,500 miles.*

Kelly-Springfield Tire Co.

Akron, Ohio

Branches in all principal cities



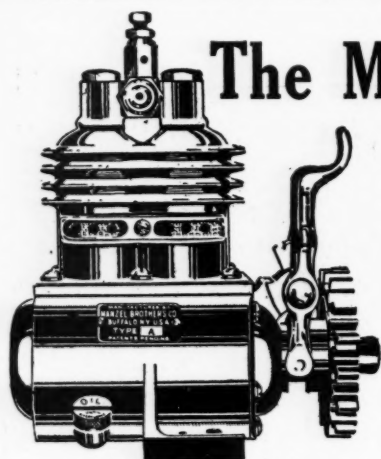
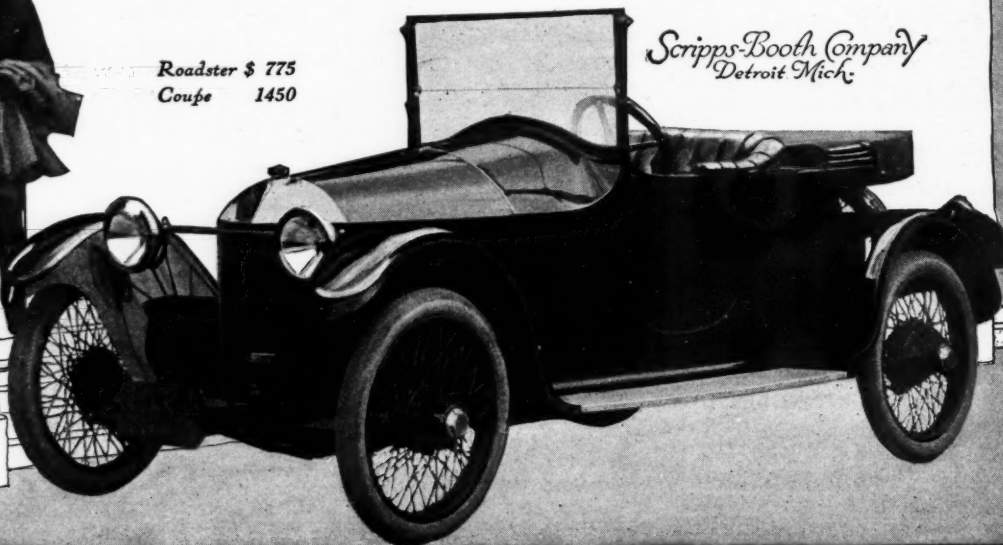
Invitation



An invitation to ride in a Scripps-Booth light car presages the enjoyment of the extreme of comfort-motoring—the realization of the acme of luxury in road travel. Comfort-engineering combined with wonderful art lines and finish and the most complete and luxurious appointments has placed Scripps-Booth luxurious light roadsters and closed cars in the most conspicuous spotlight of the year's development. Its appearance in front of the best homes in your locality and the station of its owners is more than convincing as to the real value of the Scripps-Booth car. As pride-value is a worth in the buying of a gown or a picture, it is a double value in a light car purchase, in which field the Scripps-Booth has no competition.

Roadster \$ 775
Coupe 1450

Scripps-Booth Company
Detroit Mich.



The Manzel Pump Is Tire Insurance

It will *save* you a set of tires in a season of active touring, because proper tire inflation will eliminate three-fourths of *all* tire trouble.

It will give you comfort—it will free you from the longshoreman's job of hand pumping, and give you a chance to enjoy motoring in the way you expect your guests to enjoy it—without ditch-digging labor.

Another fact of equal importance—

MANZEL

ENGINE-DRIVEN

TIRE PUMP

will give you this chance and this economy with absolute safety for your engine—without the pound and the backlash that are inseparable from single cylinder pumps—because of its two-cylinder construction. An even, always uniform supply of air is assured by this two-cylinder design, and you'll have never a worry or a thought of failure.

Try it now—your dealer will let you have it for 30 days on our guarantee. You'll keep it and you'll tell your motoring friends about it.

\$20 Complete with all fittings, including 15 feet of air hose, and pressure gauge that is always accurate.

We carry in stock fittings for the following cars:
Abbott-Detroit, Buick, Cadillac, Carter-car, Case, Chandler Six, Chalmers, Cole, Dodge, E.M.F., Enger, Franklin, Grant, Hudson, Imperial Six, Jeffery, KisselKar, Maxwell, Michigan, Mitchell, Moon, Oakland, Oldsmobile, Overland, Packard, Paige-Detroit, Rambler Cross Country, Reo, Simplex, Speedwell, Studebaker, Stutz, Velle, Westcott and others. Also for Lippard Stewart, Stewart and Buick Trucks.

MANZEL BROS. CO.,

Factory and General
Sales Offices:

306 Babcock Street, Buffalo, N. Y.

New York Office—U. S. Rubber Bldg., Broadway & 58th St.

Portland, Oregon, Office—213 Gerlinger Building

San Francisco Office—356 Market St.

DISTRIBUTORS IN ALL IMPORTANT CENTERS

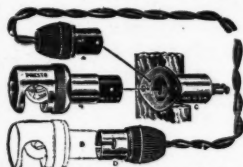
**Manzel Engine-Driven
Pump for Fords**

\$7.50

For Ford Cars there is a Manzel Engine-Driven Pump that is absolutely ideal from every standpoint—design, workmanship, ease of installation, durability and price. Complete with 12 feet of air hose, gauge and gears.



"Presto" Inspection Lamps
Attach To Battery



Combination Dash and In-
spection Lamp. Used regu-
larly as dash lamp. Inspec-
tion lamp in case of emer-
gency.



Two-cell electric lantern,
pivoted reflector. Throws
powerful light in any di-
rection demanded.



"Presto" Electric Cigar Lighters and Cord
Winder. Attach To Battery



New Cowl Dash or Step Light.
with Switch.



One of 7 different styles of
"Presto" hand lamps and
bicycle lamps. Most com-
plete line. Pivoted reflec-
tors.

Presto Specialties

Convenience Comfort Safety For Motorists

You wouldn't deliberately run your car into a burning building—
But you carry lighted matches—dangerous fires—in and around your
machine.

Protect your car—insure the safety and comfort of your passengers—

Complete Your Equipment

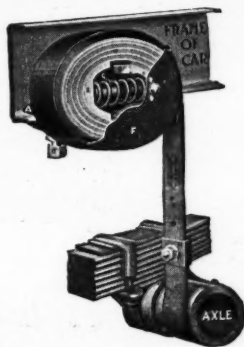
—and always use "Presto" Electric
Specialties instead of matches. Electric
cigar lighters and lamps for every need
—at extremely low prices, for conveni-
ence, comfort, safety.

Write For Free Illustrated Catalogue

Dealers and Jobbers—"Presto" Special-
ties pay. Big demand. Liberal dis-
counts. Write today.

Metal Specialties Mfg. Co. 730-738 W. Monroe St., Chicago
WESTERN BRANCH:
604 Mission St., San Francisco.

EASTERN BRANCH:
1779 Broadway, New York City.



Stop Bouncing Off the Seat!

Don't Let "Rebound" Ruin Your Car!

Ride in Comfort and Save Repair
Expense by using Gabriel Snubbers

Gabriel Manufacturing Co., 1415 E. 40th St., Cleveland, Ohio



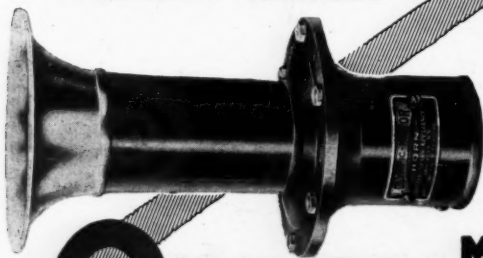
Bull Dog Quality

Represents the difference between superiority in rubberized fabrics and the ordinary kind. When you want waterproof trimmings of quality, order Bull Dog.

Bull Dog Quality is made in double and single texture of Mohairs, Serges, and other attractive fabrics, rubberized together in a manner that has made Bull Dog Quality famous for waterproof trimmings for Automobile Tops, Curtains and Upholstery. Send for Samples.

L. J. MUTTY COMPANY
BOSTON, MASS.

Two Types
Permanent Guarantee



\$5

OLYMPIC MOTOR DRIVEN HORN

DON'T pay more than \$6 for an electric horn, when the motor driven OLYMPIC does the work of electric warning signals that sell for 3 times its price. Longer service, better guarantee. Easy to operate, and effective.

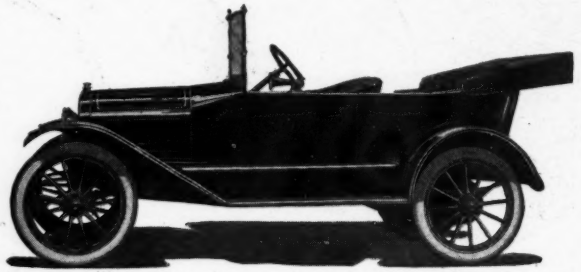
Motor Driven Horn, \$5, \$6
Olympic Vibrator Horn, \$2.50, \$3

Nearly 100,000 OLYMPIC Vibrator horns are standard equipment on leading American cars. Give better service. Last longer. Permanent guarantee.

LIBERAL DISCOUNT
to Dealers, Jobbers and Manufacturers

ELECTRIC SPARK APPLIANCE CO.
140 Imlay St., Brooklyn, N. Y.

THE F. E. CASTLE COMPANY
Western Distributors 872 Woodward Avenue, Detroit



METZ "25"

The Quality Car

A GREAT BIG PROPOSITION FOR DEALERS

This new Metz Touring Model will help you to do a much bigger business, and a very profitable business. The demand for just such a car as this will show a greater increase this year than ever before.

Listed at \$600, its equipment includes electric starter and electric lights, rain-vision windshield, one-man top, luxurious upholstery, 32-inch wheels, 3½-inch Goodrich clincher tires, Hyatt bearings, gasoline gauge, speedometer, signal horn, tools, etc. It is a handsome appearing car, a car any owner will be proud of, and so simple in operation that a woman can safely drive it. It will pay you to handle the METZ.

Write for particulars and New Catalog "K"

METZ COMPANY, Waltham, Mass.

Twitchell



The first question the tire adjuster will ask is: "Have you kept your tires inflated to the pressure we prescribe?"

If you haven't---and the condition of the tire will show whether you have or not---he will allow nothing for their premature destruction or blow-out.

Test your air pressure daily with a
TWITCHELL AIR GAUGE
and save your tires Price \$1.00

THE TWITCHELL GAUGE CO.

1204 MICHIGAN AVE.
CHICAGO, ILL.

Tire Insurance

for One Dollar



What Owners and Dealers Say About the Savidge Steering Device

has made it the most popular steering device for Ford cars on the market.

This proof of superiority in the owner's hands is the best recommendation you can ask. No other device can be like it. No other device is "just as good"—because no other device can embody the variable-cam construction which is absolutely necessary to obtain perfect, positive steering comfort.

Dealers

Hundreds of dealers are having exceptional success selling the Savidge. Get your share of the Savidge profits—sell the best. Write for selling plan.

Owners

Put one on your Ford today. Judge for yourself. Satisfaction guaranteed or your money back.

Savidge Steering Device Company

**502 Murphy Building
Indianapolis, Indiana**

See that VARIABLE CAM— We Control It—That's the Reason



Pomeroy's Automobile Rear Signal Indicator

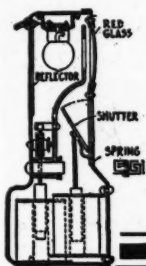
Automatically Controlled by
the Steering Wheel



Don't blame the man behind if he smashes your car. He can't tell what you are going to do at night.

The POMEROY Rear Signal Indicator will automatically tell him your anticipated movements all the time. It registers right and left, it carries the legal tail light which is always kept burning, holds the number plate and has in addition, a button on the steering wheel by which you may flash the word "STOP"!

**Price \$12.00
complete**



If you value safety and comfortable travel at night, as well as the car you drive, you need this handsome, durable, automatic and invaluable Indicator.

Ask us for further information.

B. H. POMEROY, M. E.
10 Jones Avenue, ROCHESTER, N. Y.

Pats. Pending

"Sees Everywhere at Night"

FOSTER OWL EYE LIGHT

Only searchlight obtainable with FOSTER patented universal swivel. Throws a powerful spotlight in any direction. Makes strange roads safe. Locates dangerous turns. Shows how close you are to the edge of the road. Prevents collision with unlighted horse-drawn vehicles. Looks around corners and follows winding curves.

Enables you to read road signs and street names. Spots forks.

turns and landmarks long before you get to them—enabling you to follow Blue Book routes without slowing up. Cuts through night fog like a knife. Shines like a locomotive headlight up the road.

Write for Free Booklet

Operates from storage battery or dry cells. Attaches to windshield or body of car. Handsomely finished in black with nickel trimmings. Order through your dealer or direct. In ordering state make and model of car and battery voltage.

**\$9
Complete**



**DEALERS
WANTED
EVERYWHERE**

C. H. FOSTER
Manufacturer and Distributor
of Motor Car Accessories
2303 Michigan Blvd., CHICAGO



Flush on the Dash
Like Your Speedometer

A Clock that never Stops

\$12

Nobody can rely on you, unless you can rely on your clock. The automobile clock that never stops and always keeps perfect time, meets appointments for you.

The Thompson Self-Winding Electric Clock For All Automobiles

—winds itself automatically. Never runs down. Guaranteed to keep absolutely accurate time in all kinds of weather, under all conditions. Seth-Thompson Clock Co. movement. Vibration-, water-, dust-proof. Operates on storage batteries or dry cells. Little current. Simple to install. Instructions with each clock. Convenient for women who drive. Write today for free illustrated folder and users' letters.

Dealers Wanted Everywhere
Thompson Electric Clock Company
MEMPHIS, TENNESSEE

KISSELKAR

The new designs of the ALL-YEAR Car include a Detachable Coupe Top at \$300 as well as a Detachable Sedan Top at \$350. Write us about the new touring models, the 32-Four at \$1050, the 36-Four at \$1250 and the 42-Six at \$1485—three great values. Literature ready.

KISSEL MOTOR CAR COMPANY
121 Kissel Avenue Hartford, Wis.

The ALL-YEAR Car

1916 Inter-State \$850

"The Thousand Dollar Car" at \$150 Less
Same Car—New Price

Powerful, valve-in-head motor
Big, Full Five-Passenger Body
Genuine Leather and Curled Hair
Floating Axle
Underslung Rear Springs

Oversize Tires
Two Unit Starting, Lighting and Ignition
"The Easiest Riding Light Car in America"



Energetic dealers in open territory, who wish to meet the keenest competition at a good margin of profit, will write or wire for our New Selling Agreement today.

Inter-State Motor Co.
MUNCIE, INDIANA



BRAENDER TIRES and TUBES are famous for their QUALITY

We wish to announce that irrespective of action by any other organization Braender Quality Will be Maintained

Braender Net Prices to Car Owners

Tires.	Plain.	Non-Skid.	Gray Tube.	Red Tube.
30x3	9.00	10.35	2.35	2.60
30x3½	11.00	13.35	2.70	3.00
36x4½	27.35	31.45	5.20	5.80
37x5	32.30	37.15	6.30	7.00

Established
Agents Solicited

BRAENDER RUBBER & TIRE CO.
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FREE ROAD MAPS

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New York State
New Jersey

Pennsylvania
Southern States
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Transcontinental, Showing All Trails

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Copies may be obtained from any dealer displaying the sign with the orange disc, or mailed on request.

There is More Power in
**THAT GOOD GULF GASOLINE and
SUPREME AUTO OIL**

GULF REFINING COMPANY

Dept. 1875 Frick Annex

PITTSBURGH, PA.

Accessible

Durable

Economical

Quality First

Service Always



100%
Efficient

100%
Efficient

Write for Particulars

(59)

THE LEECE-NEVILLE CO., Cleveland, O.



SINGLE UNIT

**Electric Starting
and Lighting System**

Weight 45lbs.

Famous on the Franklin
Weighs less than two-unit
systems. Naturally more efficient
and less complicated
than either one of two units

A Combination Motor Generator

Write for Particulars

DYNETO ELECTRIC CO., Syracuse, N.Y.

Send Us Your Electrical Problems



THE SIMMS HIGH-TENSION MAGNETO

AND

SIMMS-HUFF MOTOR GENERATOR

Buy a car equipped with the Simms High-Tension Magneto. Then you will have a car with the ignition system acknowledged by experts to be the most efficient.

Racing cars, cars that win hill climbs—are always equipped with high-tension magnetos.

See that any car you buy has the Simms-Huff Starting and Lighting System.

The Simms-Huff Motor Generator is the simplest, most powerful, and lightest weight starting and lighting generator.

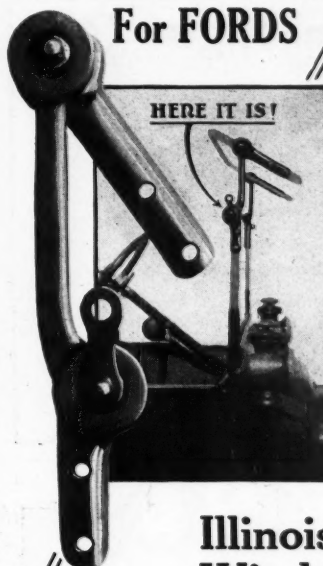
Dealers, write for full information about the Simms-Huff Starting and Lighting System for Ford Cars.

Simms Magneto Company

East Orange, N. J.

Manufacturers of the most reliable ignition, starting and lighting systems for automobiles.

For FORDS



HERE IT IS!

\$3 Gives You a Rain Vision, Ventilating Windshield

Adjusts to any position desired. Insures clear vision in rainy weather. In ventilating position, drives motor heat out of front compartment. Makes driving Ford car safe, cool and comfortable.

Illinois Automatic Windshield Hinge

Money refunded if not satisfactory. Anyone can attach in 5 minutes. Fits into old screw holes in windshield. Of best tempered steel. Guaranteed to outlast your car.

\$3 gives you same type of windshield as highest priced cars. Don't pay more! Two models—one for 1914 Fords—one for 1915 cowl dash Fords. In ordering specify model wanted. Order through your dealer or direct. Send for free booklet.

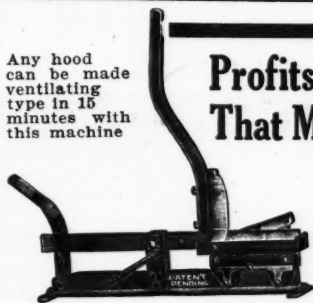
Dealers and jobbers wanted

ILLINOIS BRASS MFG. COMPANY

11-17 S. Des Plaines St.

Chicago, Ill.

Any hood can be made ventilating type in 15 minutes with this machine



Profits for Garagemen That Mean Big Money

Unventilated hoods reduce motor efficiency, force heat through the floor boards, and make summer driving uncomfortable. Owners are anxious to change.

Make Hoods Ventilating Type

The machine illustrated above, makes any hood ventilating type, in less than 15 minutes. Won't mar varnish or crack metal. Cuts clean, ornamental vent, shown below. Operated by one man. Completes job while customer waits. Charge \$1.50 to \$2 per car. Count the unventilated hoods that pass your garage. Every one means profitable business. One man made \$80 the first week—in spare time. Send for price and full details.

Write for free illustrated circular

R. G. AMES & CO.
1339 Michigan Avenue
CHICAGO



Note clean cut, ornamental vent

When Mr. Henry

Ford refunds YOUR \$50.00 or more, \$8.00 of that \$50.00 will add over \$100.00 worth of car-comfort to your FORD and will easily save you another \$100.00 in upkeep expense if you will just use a set of double spring, heat-treated steel C. C. Shock Absorbers.

They stop vibration and wear of working parts—prevent springs from breaking—save your tires and give comfort and luxury to every ride. Every set sold with the COX guarantee.

Cost but \$8 for set of 4; \$4.50 for set of two.

Send for our Free Booklet, "C. C. Because—"; it is worth your reading. We will send you the name of our nearest dealer. He can show you how to save some money on shock absorbers.

The Standard for Heavy Cars

is the C. C. Steel Triple Coil Type with the ideal adjustment and lubrication features—improved—strong—lasting—made to stand abuse. Enjoy greater comfort and protect your car from quick depreciation—attach a set of two for rear \$10

COX BRASS MFG. CO.

Established 1872

Dept. AA Albany, N. Y.

Dealers and distributors in all principal cities of U. S. A.

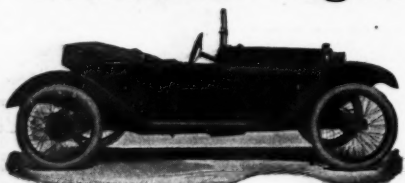
COX BRASS MFG. CO.,
Dept. AA, Albany.

Please send me your booklet "C. C. Because—" and name of nearest Cox dealer.

Name
Address
Make of car
Model
Year



The Cornelian Light Car



\$410—Top and Windshield \$25 Extra

First car to qualify for the Indianapolis 500-mile race, breaking all world's records for cars of its class.

The Car with a Great Future

Blood Bros. Machine Company, Allegan, Mich.

Makers of the famous Blood Bros. Universal Joints

Highway Six
\$1690



National Motor Vehicle Co., Manufacturers, Indianapolis

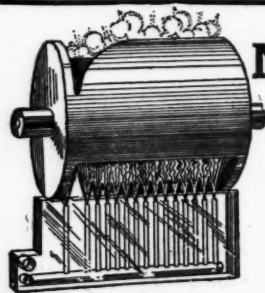
DELCO

ELECTRIC LIGHTING CRANKING IGNITION

The man who sells a Delco equipped car has a talking point with a wonderful appeal to it.

THE DAYTON ENGINEERING
LABORATORIES COMPANY

Dayton, Ohio



THE MASTER Carburetor

will give you the maximum efficiency from that engine—power, speed and fuel economy. Its simple construction eliminates adjustment, and makes your carburetor trouble a thing of the past.

Fuel Inlet Master Throttle and Fuel Distributor

A MASTER user is always a MASTER enthusiast.

MASTER CARBURETOR CORPORATION

1704 West Fort Street, Detroit, Mich.

Pacific Coast States: Master Carburetor Co., Los Angeles, Cal.

HOLLIER

\$985 EIGHT \$985

"It leads the leaders"

THE LEWIS SPRING & AXLE CO.

JACKSON MICHIGAN



Link your motor to the **BIG BOY**—a big plug for big deeds. Guaranteed forever, because it's a—

Red Head
REG. U.S. PAT. OFF.
GUARANTEED FOREVER

BIG BOY.....\$1.00 Combination.....\$1.25
Regular......75 Platinum Point.....1.50
Priming.....1.25 All Sizes—All Dealers

EMIL GROSSMAN MFG. CO., Inc.
Bush Terminal

Model Factory No. 20, Brooklyn (New York City)
Chicago: 2615 Michigan Ave.

Gasoline Can't Explode

You can build a fire under a McNutt can—you can hold a match in the opening of a McNutt can—it will **never** explode.

Hundreds of tests have been made by the New York and other Fire Departments, but no McNutt can has ever exploded.

Also—these cans prevent loss by evaporation and are so well made and reinforced that they will outlast 20 ordinary containers.

SEND FOR CATALOGUE—Our catalogue describes cans for every use and gives prices. Tear out the advertisement now to remind you to send for it.

DEALERS—These cans and devices sell on sight; remarkable opportunity; write for proposition.

JOHN C. EAMES, Inc.

320 Broadway

New York



REPUBLIC TIRES

PLAIN, "WM" AND STAGGARD TREADS

TRADE MARK REGISTERED
U. S. PATENT OFFICE

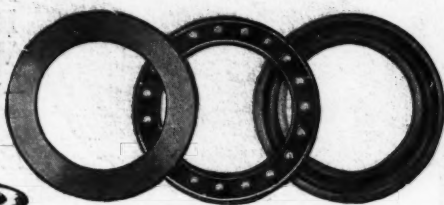
The Bearings Company of America

Sales Department, 250 W. 54th St., New York



RADIAL RETAINERS

MADE IN AMERICA



COMPLETE THRUST BEARING

Manufacturers of Star Radial Ball Retainers, Star Ball Thrust Retainers, Star Complete Ball Thrust Bearings

VIKING

SPARK PLUGS

A greater sum of the essentials to unfailing service and complete satisfaction will be found in VIKING design and construction, than in any other plug at any price.

Buy VIKING PLUGS as an insurance of service

Price \$1.00 each—all styles

THE JOHN MAC GREGOR COMPANY INC.
ROSLINDALE BOSTON, MASS.



WHY IS RAJAH

Standard Equipment on
CURTISS AEROPLANES?

Here's the Answer:

“Ignition Absolutely Sure”

Aeroplanes can't afford to take chances—can you?

Rajah Giant Plug \$1.50 postpaid

Rajah Standard Plug . . \$1.25 postpaid

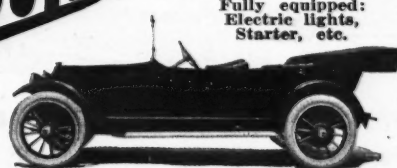
Rajah Auto-Supply Co., Bloomfield, N. J.
John Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver

Auburn

50 Per Cent
Increase

Four . . . \$ 985
Six . . . \$1550

Fully equipped:
Electric lights,
Starter, etc.



THINK OF IT—Sales doubled week after week. From cities where beauty of design appeals; from small towns where economy is considered and from farmers who demand service and the most for the money, from all places orders are pouring in for these new Auburn cars. You can't dodge facts. The facts for the Auburn's popularity are making money for other dealers in large and even the smallest of towns. Why not for you? Get the Auburn facts—get the story of Auburn's intrinsic quality—get our lucrative dealers' proposition.

WRITE US AT ONCE.

Auburn Automobile Co., Auburn, Ind.

BROWN Jr. Tire Pump

NEW PRICE, With Gauge and “T,” \$5.50

Built like a motor with lapped rings. A high grade pump at a small price for medium size tires. You cannot afford to run your car without this pump.

SEND FOR LEAFLET—JUST OFF THE PRESS

The Brown Co. 120 Bellevue Ave.
Syracuse, N. Y.

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NOV. 28, 1905
NOV. 2, 1909
AUG. 22, 1911
OCT. 17, 1913
NOV. 5, 1912
FEB. 10, 1914
OCT. 29, 1914

KINGSTON

IGNITION DEVICES

High and low tension magnetos, make-and-break coils, dash coils, motorcycle coils, switches, spark plugs and other ignition specialties. Guaranteed satisfaction

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KOKOMO ELECTRIC COMPANY, Kokomo, Ind.

Raybestos

TRADE MARK
REG. U.S. PAT. OFF.
THE PRODUCT OF BRAKE SPECIALISTS
USED FOR
BRAKE LINING - CLUTCH FACING
Manufactured by
THE ROYAL EQUIPMENT COMPANY
Bridgeport Conn.

Get This Catalog

It contains descriptions of all the famous Campbell Guaranteed Motor Car Accessories; Detachable Upholstery, Percama Straps, Boots, Accessories for Fords, etc.

Territory open for reliable established dealers

THE PERKINS-CAMPBELL COMPANY

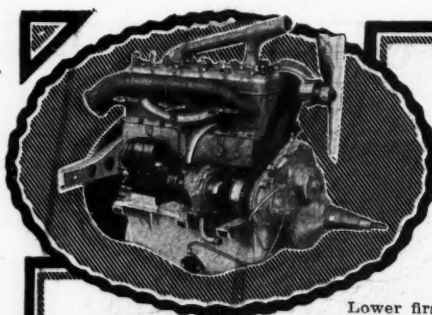
624 Broadway, Cincinnati, O.
New York Office, 89 Chambers Street

Moline-Knight "40"

F. O. B. **\$1475** Factory

40 horsepower, 5 passenger touring and 2 passenger roadster, 118-inch wheel base, 34x4-inch tires (non-skid rears), spiral bevel gear rear axle, weighs 2,896 pounds ready for the road, Auto-Light starter, high tension ignition, complete equipment, 50 horsepower touring, roadster, sedan, limousine models—\$2,500 to \$3,800.

Moline Automobile Co., East Moline, Ill.



Used in
America's
Best Light
Weight Cars

—because service
is built into

**THE
RUTENBER
MOTOR**

Lower first cost and smaller up-keep make RUTENBER the economy motor for all cars.

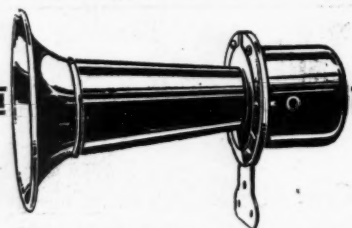
Model 20

3½x5
4-cylinder

The Rutenber Motor Co.

Marion Indiana

Chicago Office.....10 S. La Salle St.



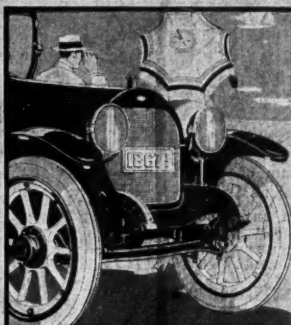
Lowest Priced Electric Horn Obtainable

REXO II

\$3.85—Ready to Attach

Guaranteed for the Life of Your Car

THE GARFORD MFG. CO., 2503 Olive Street Elyria, Ohio, U. S. A.



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Write for complete
details of new series
MARMON "41"
Nordyke & Marmon Co.
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**ZENITH
CARBURETOR**

KNOWN the world over as
the zenith of simplicity
and efficiency.

A precision instrument giving
permanently, exact carburetion
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Zenith Carburetor Co.
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GAS, OIL, AND ELECTRIC
CORCORAN LAMP CO.
CINCINNATI, O.

Lexington

CRITERION OF ITS CLASS

Thoroughbred Six—\$1875

Minute Man Four—\$1375

Six Supreme—\$2575

Equipped with Moore Multiple Exhaust System

Write for details and co-operative dealer proposition

The Lexington-Howard Co.

18th Street West

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Serve your Auto Lunch
on handsomely stained and
varnished, 3-ply veneer

CRAFT LAP BOARDS

Set of four, 12x18 inches,
in canvas case, makes
a package 1 1/4 inches
thick. Also made in
sets of 2, 3 and 6
boards. Set of four
sent prepaid on re-
ceipt of \$2.50. Send
today if your dealer
doesn't carry them.
COATES CRAFT CO.
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Four handsome Craft Lap
Boards, canvas case, \$2.50



ALWAYS ON THE JOB

Standard
DETROIT
USA

Chain and
Chainless
Trucks

Meet Every Demand

DEALERS should carefully consider the rapidly growing demand for standardized heavy duty, double duty 4-cylinder trucks. The standardized "STANDARD" meets this demand in every way.

Send for booklet B 30, describing all capacities.

STANDARD MOTOR TRUCK CO., Detroit, Mich.



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The following prices f. o. b. Detroit, effective
August 2, 1915

Ford Runabout\$390.00

Ford Touring car..... 440.00

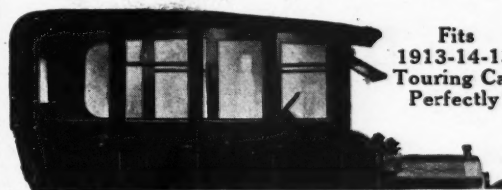
Ford Town Car..... 640.00

No speedometer included in this year's equipment,
otherwise cars fully equipped

Ford Motor Company

Detroit, Michigan

Limousine Tops for Ford Cars



Fits
1913-14-15
Touring Car
Perfectly

Winter driving
isn't very com-
fortable in an
open car, and
unless a man
has a limou-
sine, he usu-
ally stores his
machine during
the coldest
months. Why
lose from 3 to
5 months'

pleasure when you can buy a limousine top so reasonable? This limousine is durably constructed; the framework is made of the best kiln-dried lumber, reinforced at the corners. It is fitted with an adjustable rain vision windshield and handsome cowl dash which adds to the style and appearance of the car. Won't last long at the price, so send your order at once.

Special Price, \$110.00

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The most simple—the most accessible—the most
durable—the most efficient magneto ever produced
is the new Type G-4.

The Eisemann Magneto Company

Sales and General Offices,
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New York, N. Y. Indianapolis, Ind. Detroit, Mich.
245 W. 55th St. 415-417 N. Capitol Ave 802 Woodward Ave.



THE POWERFUL, SILENT SPHINX

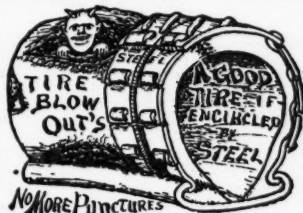
\$695

A REAL AUTOMOBILE

The lightest, strongest, most serviceable and economical
machine of its kind ever built.

112 inch wheel base. Electrically started and lighted.

Sphinx Motor Car Company, York, Pa.



Steel Protectors

Each section
2" wide 1/8"

thick. They hook to rim. As flexible as
ever. Anti-skid, can't blow out or rim
cut.

**HOW CAN THE RUBBER WEAR OFF
IF IT IS COVERED WITH STEEL?**

Try 2 or 3 sections over any old blowout
Special prices to the first in new territory

Kimball Tire Case Co. 173 Council Bluffs, Ia.

Tire covered
complete



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Electric—Steam—Gasoline—Alcohol

There is a Shaler Vulcanizer for every purpose from The
Tourists' Models to carry in the tool box to large equipment for
Garages—Tube-Kit \$2, Ford Kit \$2.75, Vul-Kit \$3.50, Model
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The Shaler is recognized as standard and is used in best Garages
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Write for complete new catalog.

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BEST UNDER A CAR - BEST ON EARTH

Will establish you in business on a permanent and profitable basis.

Our Policy:

One good dealer in each territory, backed by the best goods and unlimited co-operation.

New Jersey Car Spring & Rubber Company
Jersey City, New Jersey



DOUBLE SEAL TIRE VALVE



No tool needed to seat or remove Valve

Interchangeable with All Stems

Fifty Cents Per Dozen
Single Valves, Five Cents

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Actual Size

JUMBO SPARK PLUGS

Jumbo Jiant \$1.25	Jumbo Regular \$1.00	Jumbo Junior \$.75	Jumbo Special for Fords \$.75
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We can create for you a Winton Six closed car precisely as you want it. That takes time, of course. If you delay ordering, you must content yourself with a stock model. So, make your selection now, and let us give your personal requirements the most exacting attention, and guarantee delivery to you before the first nip of the earliest frost. A card from you will bring full information.

THE WINTON COMPANY
424 Berea Road, Cleveland, Ohio, U. S. A.
World's First Maker of Sixes Exclusively

HORN and FAN Combined



Oakes

Gets The Roads

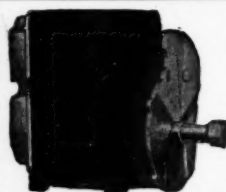
No gears, motor, batteries or wires to give trouble. Gives warning signal by merely pushing the button at driver's seat. Increases efficiency of fan and motor. Keeps radiator cool. Never fails to sound. Long life. Is easily interchangeable with fan on any Ford in a minute's time. Most reliable and safest horn. Write for dealer's proposition.

Fan-Horn-Pump, \$12.50
Fan-Pump, \$7.50

The Oakes Co.
Indianapolis

FOR FORD CARS

FISHER ELECTRIC LIGHTING and STARTING SYSTEM



Motor and generator combined in one compact, self-contained unit, although acting independent of one another. 12-volt, 3-wire system, 6-volt lamps. Noiseless. Attached without machine work. Write.

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(Short-turn)

Automobile Trailer



Quickly attached to any automobile. Light, durable. Trails in the track of the automobile. Will not skid. A modern necessity at a nominal price. Write for liberal dealer proposition. THE SIMPLEX SHORT-TURN GEAR CO. Dept. G, Anderson, Ind.

Electric Auto-Lite Starting-Lighting-Ignition

Electric Auto-Lite equipment for automobiles is as famous for the service that backs it as for the reliability and economy of its operation.

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There is a big field for PERFECTION RINGS and energetic dealers will find them mighty profitable to sell. Write for our prices and discounts.

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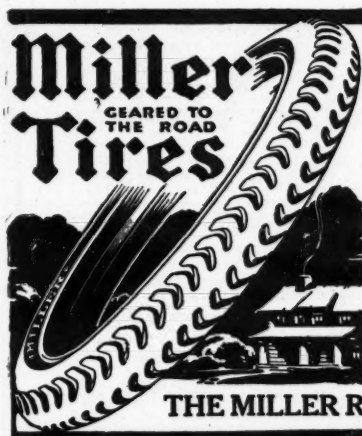
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SEND FOR NEW CATALOG

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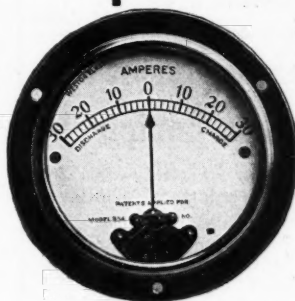
Miller don't pit one dealer against another

One dealer in a town insures a good profit to dealers just as the "geared to the road tread" insures Safety and greater Mileage to users. Write for the Miller plan.

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What About Lights And Starting Motor?

How do you know when they will fail you?



Weston

Model 354 AMMETER

On Your Dashboard or Cowl

will keep you posted every minute regarding electrical conditions. It gives you warning of approaching trouble. Its exact information is invaluable—the cheapest and best insurance you can buy.

Write for full information.

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Have the far-reaching call for country roads—the quick, snappy shriek for city traffic. Use the Sparton on your car.



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Model "F" \$4

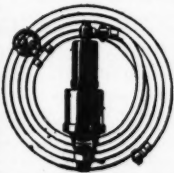
finished in satin black and nickel or all black.

Hand Pumping Is Just Physical Torture!

But you will enjoy pumping tires with a

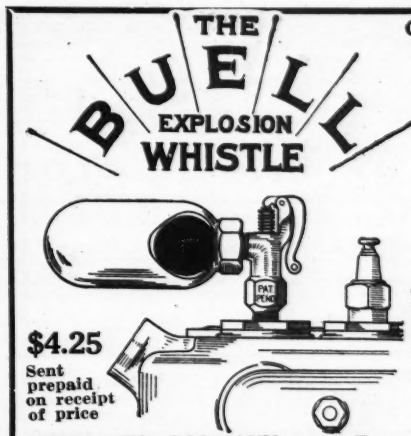
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Simply substitute the pump for any convenient spark plug. The motor does the work—lets the motorist out.



Price, complete with 12 ft. hose and gauge, \$10. MAYO Q. D. Spark Plug, \$1.50 extra. Try one Free on your car for 30 days.

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One Agent Sold \$1,400 Worth in June

This is the new warning device that is making such a hit. Screws in place of priming cup and blown by the explosion pressure. Controlled by cable conveniently located for driver. Does not hinder motor. The simplest and most powerful signal made. Absolutely free from trouble and need of adjustment.

Life estimated at over 200 years

Consequently the lowest-priced signal made. Most effective warning you ever heard. A true warning tone, instantly recognized as such. Write for circular.

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THE OLD RELIABLE POLSON PATCHES WON'T PINCH!

Polson on the patch is a pledge of Safety and Security! Polson Blow-out Patches are the Strongest Patches made! As stout as the tire itself. They fit perfectly and "stay put." The rubber ends prevent pinching.

Demand Polson Blow-out Patches, Polson Reliners, Polson Tire Boots, and Polson Tube Patches. They're sold by good-service dealers everywhere. Write to us if your dealer can't supply you. It will pay to use Polsons.

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Manufacturers of high grade Automobile Tire Accessories



For gears that rattle and that mesh with a smash-up crash every time you change speeds, use

NON-FLUID OIL

When you put a supply of this lubricant into your housing, you snuff out friction and stife noise. Your gears mesh in a soft-yielding cushion—metal never touches metal. Each tooth is coated with a good bodied lubricant, not merely wet with oil or flmed with grease. Get a can today and prove it.

"K. No. 00 Special" grade for sliding gear transmission "K. No. 000" for differential compression cups and all bearings Reduced prices for 1915. Ask your dealer.

Avoid Substitutes—Look for the orange-colored can with above trademark

New York & New Jersey Lubricant Co.

165 Broadway, New York 1430 Michigan Ave., Chicago, Ill.



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NO MOVING PARTS
ONLY ONE ADJUSTMENT

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The Clearing House of the Motor Car Industry

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ALCO—5 Passenger, 4 Cylinder
Electric lighted and generator; recently re-painted; fully equipped. This is an elegant car for touring.
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FOR SALE

One Pullman Junior 1915 Model. Has Never Been Used. Price Right.

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You can get from us good, serviceable machines of various makes for \$400 and up.

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Matheson

Cars and Repair Parts

FRANK F. MATHESON, Wilkes-Barre, Pa.

WHITE 30 GAS CAR FOR SALE CHEAP

40 H. P. White Steamer bargain. White steam plant—fine for boat

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To Buy—A Packard thirty 1908 to 1912 model; must be cheap. **Merritt Bros., San Marcos, Texas.**

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Fireproof, steam heated Garage in County Seat town; eastern South Dakota; Ford Agency; Easy Terms.

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FOR SALE—First class, up to date vulcanizing business, stock, tools and good will in city of 12,000 pop., and working radius of 50 miles. Best vulcanizing business in this part of state. Reason for selling, party wishes to go west. For particulars address

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FOR SALE—GARAGE. One of the best locations in eastern Indiana. Good chance for a first class mechanic with small capital. Agency for one of the best sellers.

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WANTED

First-class repair man for Rhode Bros. Garage, Rock Rapids, Iowa. No floaters need apply.

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Office and Service Manager

A large retail automobile sales agency requires the services of a competent office and service manager or superintendent. Must be thoroughly versed in both the accounting and mechanical end of the automobile business. Must be tactful in handling high class trade, and an aggressive business man. Good salary and permanent position with a live concern for the right man.

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10 LINCOLN MILLERS \$50.00 EACH

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\$50—The Admiral Welding Equipment—\$50
Outfits you for handling any job. Decarbonizing Torch, Instruction Book and Supplies included. The Best at Any Price. Books Free.
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A Big Demand for Bosch, Eisemann and Mea magnetos. We pay cash for them. Send full description.

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Magneto Experts

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Always before you spend money on Ignition or Lighting Repairing, "Try Us and Be Convinced." Expert repairing, Magnetos, Coils, Generators, Starting Motors, Ammeters, Armatures and Fields rewound. **CHICAGO MAGNETO EXCHANGE, Cal. 3954, 2333 Mich. Ave., Chicago.**

GUARANTEED WORKMANSHIP

PROMPT SERVICE

Magnetos Repaired Armature Winding
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Factory Experts on All Electric Starters

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MAGNETOS AND GENERATORS REPAIRED
By Ignition Specialists. Delco System. Spare parts for all instruments. Iridium platinum parts. Carbon brushes a specialty. Quick service. Ref. South Side State Bank.

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MAGNETO REPAIRING
OFFICIAL EISEMANN SERVICE STATION
Complete repair department for all makes. We return work promptly and itemize all jobs estimated when required. Klaxon Service Station.
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MAGNETOS—Sold, Exchanged, Repaired
Dealers and repairers of generators, starting motors, magnetos and coils. Several Bosch, Remy and Splittdorf magnetos at bargain prices.
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Our Service Saves Your Electrical Equipment

It has taken years of study and experiment with every electrical appliance for the automobile to establish for you our thoroughly efficient service station.

Today, our battery department is equipped with every device known for prompt repairs, and is in charge of experienced workmen.

Our starting and magneto department gives you the benefit of the same high-grade service of other trained specialists.

Every job is thoroughly tested before delivery.

Official repair shop for

Willard Storage Batteries

Northeast Starters

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—but we repair anything electrical if it can be repaired.

The E. S. Cowie Electric Co.

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We carry the largest stock of repair parts for any make of magneto, coil, lighting or starting system. We repair any system. Get our prices on repairs, also magnetos.

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MAILING LISTS AND STATISTICS. Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of electric, trucks, Fords, Studebaker, Overland, etc. **MOTOR LIST CO. OF AMERICA,** 1107 Locust St., Des Moines, Iowa.

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WANTED—First-class lines, such as Bodies, Accessories, Castings, etc., to sell to automobile and other manufacturers throughout Indiana. We are well established Manufacturers' Agents, and can get the business. Address Box E-385, c/o Motor Age.

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Gas, Oil and Steam Engine Hand Book
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"THE MODERN MOTOR CAR"

Just off the press—512 pages covering all phases of the Motor Car, 170 pages on Electric Starting and Lighting. Send for sample pages.

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ALL SEASON'S RECORDS MADE WITH
Schebler equipment. Why not get a Schebler
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All Types of Bearings
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Runabout body upholstered and painted,
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28x3 wire wheels, ball bearing hubs, set
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Stub spindles with cones to fit, set of four
2 3/4 x 4, 4-cyl. unit motors and transmis-
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Steering gears, right or left hand, each.
Croxon motors with clutch and carbure-
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Pressed steel frames for any size car.
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set of four 13.00
34x4 Firestone demountable for Michigan
Cars, each 6.00
30x3 1/2 clincher wheels for Ford cars,
each 2.75
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Crown fenders for Ford cars, set..... 13.00
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700-ft. electric starting cable, per ft.15
900-ft. secondary cable, 1/2", per 100 ft. 4.00
Nickel steel driving gears for Ford Cars
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4-cyl. gasoline starters, can be used on
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We sell everything used on an automobile or
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also machine work of all description. Send
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K. C. Auto Parts Co.

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A TOP EXPOSED TO THE SUN NEEDS OIL

Leather, rubber and pantasote top should fre-
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Dressing, which is purely an oil preparation
that keeps them soft and pliable, and looking
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Beautiful Racy Design

SEND FOR LITERATURE

Complete and Ready for Installation

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\$85.00

Specials for Fords

"V" Shape Radiators—Honeycomb.....\$28.50
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Dash Air Pressure Pumps..... 1.00
4 lbs. Air Pressure Gauges..... .75
1/2" Pipe Thread Grease Cups..... .10
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4 Cyl. S. Remy Magnetos..... 10.00
Jacox Steering Gears, complete..... 10.00
Dyneto Lighting Generators..... 12.00
34x4 and 4 1/4 Q. D. Wheels..... 2.00
Springs for Many Makes of Cars—Prices Right

Look for Additional Bargains Next Week

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DETROIT, MICHIGAN

ANYTHING AND EVERYTHING FOR THE AUTOMOBILE

6-cylinder 45 H. P. Beaver motors
complete with clutch and trans-
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Special high-grade Speedster
Bodies, upholstered with genu-
ine leather..... 50.00
Fore Door Roadster Bodies, genu-
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Delivery and Truck Bodies of all
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Special Speedster Seats, per pair 16.00
Radiators, large assortment.....
.....\$10.00 to 22.00
Five-passenger Silk Mohair Tops 18.00
High-grade electric lamps, 11 1/4",
black and nickel finish, special 5.50
Frames, Springs, Axles, Windshields,
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For 1915 Fords

Write for illustrated circular

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Give Us a Chance to Save You
Money.

Notice the Following Bargains:

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Wall 5-pass. bodies, not upholstered, 33"
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Write for catalog.

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Built, Recovered and Repaired

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AUTO SALVAGE CO.

1418 Main St. Kansas City, Mo.

Buick 10, E. M. F. Flanders, Winton, Overland,
and Regal 30. Parts a Specialty.

Motor parts and accessories for almost any
make of car

Write Us Your Needs

The Clearing House—continued.

AUTO SEAT COVERS AUTO TOPS AUTO CUSHIONS TOP DUST HOODS

For all makes of cars. Sit right down and write for our samples and price list.
Best Materials High Class Workmanship
We maintain a separate department for repairs

WESTERN AUTO TOP CO.
1913-1933 Harney St. Omaha, Neb.

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Mohair Tops, runabout, \$20.00; touring, \$30.00
Racing Seats, per pair, \$15.00

AMERICAN AUTO TOP MFG. CO.
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Auto Tops Bodies and Seat Covers
Hand made. We make a specialty of one man tops with Jiffy curtains. Write for prices.
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One Firm One Service
One Guarantee

Back of Every Bearing Ground by

Ahlberg Bearing Company

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Limited Sale—New six-volt starting batteries, value \$20.50. Now \$15.00.

THE AMPVO BATTERY CO.
3031 Michigan Ave. Chicago, Ill.

Belfast Bucket or Racing Seats

Well made and attractive in appearance. Prices low. Discount to dealers and jobbers.

BELFAST MFG. CO.
Dept. M Cincinnati.

BIG DEALS

enable us to sell parts and accessories at exceptionally low prices. Bargain Bulletin on request.

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Bucket Seats

Racing Bodies Delivery Bodies for Fords
AUTO REMODELING CO.

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CAN'T RUST YOUR RIMS, OR MAKE YOUR TIRES STICK

when one coat of Peerless Anti-Rust Rim Paint has been applied. Dries in four to five hours, and will always allow the tires to be removed with ease. Ask anyone selling automobile supplies.

THE COLUMBUS VARNISH CO.
Makers Columbus, Ohio

Cocoa and Carpet Mats, Hand Made Seat Covers, Auto Tops Built and Repaired

AUTO CAPE TOP CO.
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DEALERS:

Ford gasoline gauge. Accurate, registers in gallons. Always in view. Price \$1.00. Sample sent any place in U. S. if you send 60 cents.
HENES SALES CORPORATION
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F. & H. WIRE WHEELS

Equipped with F. & H. Special Wire Wheel Rims. Adaptable to any car. Complete equipment for Ford cars.

THE F. & H. WIRE WHEEL CO.
Springfield, O.

Eventually

You will purchase repairs and supplies from us. Why not start now and save money?

NEW 4 CYL. MOTORS

Mighty Michigan, 50 H.P., 4½x5½.....\$135.00
Marion 35 H.P., 4x5, with crank & pump 115.00
Figgins T head, 4x4½, with pump..... 135.00
Croton Buda, 4½x5½, with crank..... 125.00
Krit Unit power plant with Remy unisparner, carburetor, fan, pedals, levers, pump, and plugs..... 175.00
Badger (light car type) 2½x3½..... 75.00

USED 4 CYL. MOTOR

Krit 1914 unit power plant with Remy unisparner, carburetor, fan, pedals, and pump, 22 H.P..... 160.00
Krit 1913 unit power plant with levers, 22 H. P..... 135.00
Thomas 60 H.P., 5½x6 fitted with Bosch magneto, Stromberg carburetor..... 150.00
Rambler 35 H.P., overhead valves..... 65.00
Cadillac 40 H.P., copper water jacketed Large stock 2-cyl. opposed motors. Get our prices. 75.00

TRANSMISSIONS

Keeton 4-speed center control..... 75.00
Brown & Lipe 3-speed, with levers..... 45.00
Krit 1915 with disc clutch and pedals and levers..... 50.00
Krit 1912 with disc clutch and pedals... 45.00
Planetary 8" shaft drive..... 16.00

REAR AXLES

Weston-Mott full floating, complete..... 85.00
Weston-Mott semi-floating, complete..... 45.00
Car-Nation (light car), complete..... 25.00

FRONT AXLES

Weston-Mott Henderson 28½ centers..... 18.00
F.A.L. 29½ spring centers, complete..... 16.50
Weston-Mott (Elmore) 30" centers..... 14.00
Car-Nation (light car), complete..... 10.00

RADIATORS

Flat tube honeycomb to fit Ford..... 16.00
V-shape (brass) to fit Ford..... 20.00
Buick 10 (give year)..... 19.75
Plain or V-shape for any car. Write for prices.

BODIES

Taxicab, upholstered and painted..... 100.00
Wahl 5-pass. upholstered..... 65.00
Stad 5-pass., upholstered and painted (will fit Ford)..... 50.00

FRAMES

Sterling 32" wide, 150" long..... 15.00
Michigan, 145½" long..... 18.50

STEERING GEARS

Speedwell (right hand steer)..... 14.00
Krit (left or right hand steer)..... 9.00

GASOLINE TANKS

Oval 10x16x30 flat ends, 1 filler cap..... 4.25
Oval 10x20x33½, 2 filler caps (alum)..... 10.50
Square tanks, ass't sizes..... 2.00

MUFFLERS

Goldberg 16½x5½, 1½" cut-out..... 2.00
Swain 13x6, 1½" threaded valve..... 1.50

MAGNETOS, 4 CYL.

Splitdorf Model A with Kingston coil... 20.00
K. & W. Model J (high tension)..... 35.00

SPECIALS FOR FORDS

One-Man tops (mohair) with Jiffy curtains..... 25.00
Rain vision windshields with cowl (makes your car look like a 1916)..... 12.00
Crown top fenders, set of 4..... 13.00
Presto demountable rims and wheels, set Simplex shock absorbers, set of 4..... 3.85
Stewart speedometers, Model 100..... 6.50
Simplex two, compression starter..... 12.00

MISCELLANEOUS

EZ Presto gas starters, 4-cyl..... 2.95
Secondary ignition cable, per C ft..... 2.95
Dash Boards, 24x38..... 1.00
Silk Mohair (for tops), per yd..... .90
Linoleum strips, 59½x9..... .75

A complete line of repairs and supplies on hand at all times. If you are unable to decide which part to buy, send us the specifications and we will help you make a selection.

Special quotations in quantities. Send for our bulletin of bargains. Repairmen, get our forging sheet.

Dept. M 826

AUTO PARTS CO.
737-39 W. Jackson Blvd.,
Chicago, Ill.

BODIES FOR FORD CARS

Commercial bodies guaranteed to fit Model "T" Ford. Bucket seats not painted or trimmed, \$5.00 per pair. Trimmed and upholstered backs and cushions, \$15.00 per pair. We also build a full line of Speedster bodies complete; also Ambulance and Undertakers' cars all for Ford chassis. Send for our catalog. Agents wanted everywhere.

COLUMBIA BODY CO. OF DETROIT
21-23 Selden Ave. Detroit, Mich.

Ford Dealers and Owners

We manufacture tapered axles for Fords of a particularly tough steel and are the only manufacturers who guarantee that the axles for Fords which we furnish will not crack out in the keyseats for a period of one year, each axle being stamped with the date at time of shipment.

Price, \$2.50. Dealers, regular discounts. We also manufacture Spring Radius Rods, Radiator Cradles, Kant Kum Off Belt Holders, and the celebrated "Anglers Spare Demountable Wheel" for the Ford car.

"ANGIERS"
Streator, Ill., U. S. A.
Agents wanted for our lines

FOR FORDS

The M-G Front Axle Brace and Shock Absorber

is a necessity, not a luxury. Made of high grade spring steel. Positively prevents bending or breaking of radius rod. Makes car steer and ride better. Sold under a money-back guarantee.

MONNICH-GAYLORD CO., Hooper, Neb.

FOR SALE

One 10-bbl. Bowser Gasoline Tank, Pump and Filterer. One 65-gal. Bowser Lubricating Oil Tank and Pump. These outfits have been used six months. One 13 in., 8 ft. Bed, Barnes Lathe, used two years.

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KOMFORT Shock Absorber

Saves jolts, jars and vibrations and furnishes the very object of motoring—Comfort.

Adds longer life to all parts of your car by preventing sudden expansion and contraction of springs.

Price \$40.00 Discount 50%

Agents Wanted Everywhere

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It pays to keep your car well painted. You can do it yourself and save money. Our instruction book makes it easy.

GIDDEN PAINT CO.
7412 Indiana Ave. Cleveland, O.

Motor Bargains

25 H. P. Unit Power Plants.....\$140.00
Engines only..... 100.00
30 H. P. Unit Power Plants..... 170.00
Engines only..... 125.00
40 H. P. Unit Power Plants..... 200.00
Engines only..... 155.00
55 H. P. Engines only \$250.00.

All Four Cylinder Four Cycle.

Bargains for Quick Sale

Pittsburgh Model Engine Co.
Pittsburgh, Pa., and Peru, Ind.

The Clearing House—continued.

Get Our Prices

on anything for the automobile. We are the world's largest dealers and can supply you anything. Get our prices before buying.

Among thousands of value giving bargains are listed the following:

BODIES

Cadillac, several models, New Touring Bodies.....	\$ 75.00
Buick, several models, New Touring Bodies.....	\$65.00 & 75.00
Studebaker New Touring Bodies.....	65.00
Empire New Touring Bodies.....	65.00
and many others.	

ENGINES

Herschell Spillman 6 cyl. 50 H.P.....	\$275.00
Herschell Spillman 4 cyl. 40 H.P.....	175.00
Brownell Unit Power Plant 6 cyl. 50 H.P.	275.00
Brownell Unit Power Plant 6 cyl. 35 H.P.	225.00
Wisconsin Unit Power Plant 6 cyl. 60 H.P.	225.00
Buda Motor 4 cyl. 35 H.P.....	175.00
Continental Motor 4 cyl. 15 H.P.....	65.00
And many others.	

AXLES

Weston Mott Rear Axle, New medium weight.....	\$ 45.00
Weston Mott Rear Axle, New heavy weight.....	55.00
Lewis Rear Axle, New heavy weight.....	60.00
We also have a selection of used overhauled axles at \$20.00 up.	

NEW RADIATORS GUARANTEED

Honeycomb Flat, for Ford.....	\$ 19.50
Honeycomb "V" shaped, for Ford.....	27.50
Buick "10" Honeycomb Flat.....	22.50
Buick "10" Honeycomb "V" shaped.....	27.50
Rambler, all models.....	23.50
Hudson "20" Honeycomb.....	29.00

SPECIALS FOR FORDS

Touring Tops complete, for Ford.....	\$ 18.50
Roadster Tops complete, for Ford.....	15.00
1-Man Top with jiffy curtains, for Ford..	25.00
Cowl Shield, for Ford.....	12.00
Dem. Wheel sets for Ford.....	15.95
Speedometer, Stewart & Warner \$40 style	9.50
Elec. Torpedo B & N Head lamps, 12" size.....	\$5.00 pr.
Tool Boxes, all sizes.....	1.45 ea.
Auto creepers, large size.....	.85 ea.
Gasoline Tanks, all sizes.....	4.50 up
Bumpers, all styles.....	2.50 up

THOUSANDS OF OTHERS

SEND FOR OUR "PRICE WRECKER"

Times Square Auto Co.

WORLD'S LARGEST DEALERS

S. W. Cor. 56th St. & Broadway, N. Y.
1210 Michigan Ave., Chicago

MAKE YOUR MOHAIR TOP LAST ANOTHER SEASON

Peerless Mohair Top Dressing will water-proof and renew the finish of an old mohair top, making it look like new. Ask anyone selling automobile supplies.

THE COLUMBUS VARNISH CO.
Makers Columbus, Ohio

PLEASURE BODIES FOR FORDS

New 1915 cowl dash Ford Touring and Roadster Bodies at prices that appeal. Get our prices before buying. LONDON AUTO SUPPLY CO., 2548 Wabash Ave., Chicago.

MOTORS

Franklin, 4 cyl., 4 x 4½.....	\$ 40.00
Flanders 20, 3 speed.....	75.00
Continental, 30 H. P.....	75.00
Oswald, 4 cyl., 4 x 4½.....	75.00
Moon, Model C, 4½ x 5¼.....	75.00
Stoddard Dayton, 8-K, 4¾ x 5¼..	75.00
Regal 30, 4 x 4½.....	75.00
Bergdoll, unit power plant, 3¾ x 4½	150.00
Jackson, unit power plant, 4½ x 4½	150.00
Franklin, 6 cyl., 3½ x 4.....	175.00

Above are used motors, guaranteed to be in good shape. Will take other motors in on trade.

Write us for further particulars

AUTO WRECKING CO.

13th and Oak Kansas City, Mo.

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Closing Out Bodies, Motors, Etc.

Cadillac 1914 touring bodies.....	\$75.00
Krit 1914 bodies, roadster.....	35.00
Touring.....	45.00
Studebaker six-cyl. 1915 bodies, 5-pass..	65.00
1912 E. M. F. 30 touring, 1913 Studebaker	
25 touring and 1913 Studebaker 25	
roadster, each.....	50.00
Round gasoline tanks, upwards from....	2.00
Cadillac fenders, each.....	3.00
Maxwell Crown fenders, each.....	2.00
Splitdorf magnetos.....	9.00
Splitdorf Model D coils.....	8.00
Studebaker 25 and 35 radiators.....	15.00
Studebaker 25 motor, electric starter and	
generator.....	125.00
Studebaker six-cyl. motor.....	125.00
E. M. F. parts for sale.	

NICHOLDS CO.,
Detroit, Mich.

"NEWTRED"

Will Save You Money

A Para Rubber Compound positively self vulcanizing. Retreads your worn tires and sections of tires. A boon to all motorists. Take any worn tire and apply "NEWTRED." The results will surprise you.

¼ lb. can, \$1.50

Send for a can today. Satisfaction guaranteed or money refunded.

Yours for greater mileage.

S. V. RUBBER WORKS

MORRISTOWN NEW JERSEY

Paint Your Car Yourself

Save \$25 to \$75 by doing the work at home with the Arsenal system. Our big free booklet, "The Car Beautiful," tells how. Send for it today.

Arsenal Varnish Company
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RACING BODIES AND SEATS

for all chassis—guaranteed to fit.

Fenders, Hoods, Tanks, Radiators

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SHIP THAT TROUBLESOME CARBURETOR by Parcel Post. We rebuild and install new parts. Factory testing methods used. Service Station for Rayfield, Schebler, Stromberg and Holly. All work guaranteed. Willis, Carburetor Specialists, 358-360 Belleville Ave., Newark, N. J.

Self-Help Best

You help yourself best by buying accessories and auto repair parts from us because we sell at world's lowest prices.

5-passenger bodies in the rough....	\$25.00
Running boards, per set.....	3.00
Jacox and Gemmer Steering gears (right and left hand drive) each.	7.50
Spade Universal Joint.....	6.50
Bearings, all sizes and kinds, at bargain prices.	
Drag links.....	1.50
Transmissions and rear axle gears to fit all cars—write for prices.	
Heavy truck radiators.....	70.00
Cone clutches (various sizes)	
Mufflers (different sizes), each....	1.00
Splash guards, pair.....	1.00
Dashes, each.....	.75
32x3½ Detroit Demountable Rims (for Dunlop, etc., side tires) while they last.....	1.50
Front axles with hubs.....	12.00 up
Four 36x4 Firestone Universal Wheels and (5) rims.....	21.00
Locking rings—all sizes and makes (this week only).....	.50
1¼" Bennett Carburetors, each....	4.00
Dash Ventilators, per pair.....	.50
Silent chains for all cars—foot....	.60
Brass running board moulding, per foot.....	.03
Bosch 6-cylinder magnetos.....	40.00
Foot rails, nickel plated, each....	.35
Diamond repair outfit No. 6.....	.50
Windshields, 37x23, Clear Vision..	6.00
Springs, all sizes, from.....	2.00 up
Studebaker "25" Radiator.....	15.00
Radiators with hood and support (Packard style).....	30.00
Tops—Cadillac tops (all models) with side curtains.....	17.50 up
7-passenger touring car tops, from.....	10.00 to 15.00

Fenders to fit all cars

at special low prices.

Radiators for Ford (Model T Honeycomb).....	17.00 up
Radiators for other makes at sale prices.	
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Radiator Hose—all sizes, foot....	.17 up
1¼" black bar adjustable bumpers.	3.75

All Parts to Build Complete Cars

Thousands of bargains not listed. Write for our catalog—all made in U.S.A.

PURITAN MACHINE CO.

"The Auto House That Dunk Built."

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ALL PARTS FOR ALL CARS

The Clearing House—continued.

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All equipment for changing your car to a Speedster

Bodies, Tanks, Hoods, Cows, etc.

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RADIATOR BARGAINS

Ford model T honeycomb, V-shaped.....\$22.50
Buick 16 and 17.....35.50
Buick 10.....20.30
Hudson 20, 32 and 33.....28.50
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Cutting, Models A and B, 40 and T 35.....30.00
Colby, Models 40 and 50.....30.00
Rambler radiators all models.....26.00

Write for prices on other makes

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STUDEBAKER 25 & 35 MODELS
We are offering for cash, while they last, these popular radiators. They are all new, black enamel finish, Fin and Tube construction.

Price \$16.00 each f. o. b. Detroit

Detroit Radiator & Specialty Co.
963 Woodward Ave., Detroit, Mich.

Radiators

At Lowest Prices in the United States

Plain to fit Ford cars.....\$16.00
"V" shaped to fit Ford cars.....20.00
Buick 10 (give year).....19.50
Hudson 20.....28.00
E. M. F. 30.....28.00
Hupmobile 20.....21.25
Oakland 1911.....28.50
Overland 59-69-T-40-32.....29.00
Regal MT Underslung-M-20-FL-MS.....30.25
Studebaker 35.....30.00
Plain or "V" Shape Radiators for Any Car.
If Your Car Is Not Listed Write for Special Quotations.

Dept. M 819

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RIMS—ALL MAKES AND TYPES

Parts for all old types, including Goodyear "7". Largest distributors. Dealers—Write for Prices.

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RIMS — RIMS — RIMS
And all necessary parts. Most complete assortment of all makes. Special prices on all kinds of Ford wheels and rims.

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D. W. F., Rhineland, New Departure, Hyatt, and other standard makes annular bearings, all sizes, 40% off list. Timken bearings and cups, all sizes, 20% off list.
Rayfield 1 1/4" and 1 1/2" carburetors.....\$ 15.00
Stromberg carburetors, G 1 1/4", double jet.....11.00
Schebler Model R, 1 1/4" carburetors.....12.50
Schebler Model L, 1 1/4" carburetors.....8.00
Marvel, Holley or Kingston carburetors, 1 1/4".....3.00
Prest-O-Lite tanks, model B, filled.....11.50
Stewart speedometer, Model B, \$50 list.....12.50
Same with clock and electric light comb. list \$85.....20.50
Magneto, Bosch 6-cyl. DU 6 H.T.....50.00
Eisemann H.T., 6-cyl. E.M.I.R. 6.....42.50
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Comb. tool box and running board, 60".....2.50
Rambler motor, 4-cyl., all models.....135.00
Other parts and accessories at equally low figures.

Automobile Appliance Company

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ROADSTER BODIES FOR NEW 1915 FORDS

These bodies include new cowl, top, cushions, side curtains, slip cover, floor boards, rubber mat, dash and hood support, windshield, rear round fenders and fenders, 2 side lamps and tail lamp. Complete, \$65.00 f. o. b. Detroit, crated. Fit any Ford chassis from 1912 up.

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apply one coat of Peerless Lining Dye to make the lining of your dirty, stained and greasy spotted top a dark, uniform color. Ask anyone selling automobile supplies.

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Makers Columbus, Ohio

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We Can Save You Money on Repair Parts or Supplies for Your Auto.

We also buy old autos—condition no object—or any part of an auto, or if you want to trade parts we will trade with you.

Can supply you with Crank Cases, Crank Shafts, Cam Shafts, Cylinders, Pistons, Connecting Rods, Radiators, Gears (any style), Timers, Magneto, Coils, Carburetors, Manifolds, Water Pumps, Transmissions, Rear and Front Axles, Wheels, Steering Gears (complete), Steering Wheels, Gasoline Tanks, Wind Shields, Springs, Bodies, Seats and Cushions, Jacks, Tires and Tubes, Head Lamps, Side Lamps and Tail Lamps (any style), Prest-O-Lite and Search Light Tanks, Horns, Mufflers—in fact, any part of an auto.

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Apply one coat of Peerless Mirroroid for a full, rich lustre that dries in four to five hours, and is applied with a cloth. Ask anyone selling automobile supplies.

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Makers Columbus, Ohio

U. S. L. Starters at \$100

We have a few of these starters complete that we can sell at the above price.

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We Buy New Bearings of all kinds

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For any car or Truck. New FORD Wheels with 30x3 1/2 Clincher rims\$1.90

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10x12 FORD SPECIAL 10x12

2-foot width, \$10.00 extra. 2-foot length

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ALL OUR RADIATOR REPAIRING GUARANTEED. New Radiators, Hoods, Fenders, Tanks and New Cores installed in old radiators at bargain prices.

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A New Radiator or Your Old One repaired. Repairs in one day—a new radiator in two days. We are specialists also on fenders, hoods, gas tanks, lamps and all auto sheet metal work.

WABASH AUTO RADIATOR MFG. CO.
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AUTO RADIATORS REPAIRED

And rebuilt to look like new. All work guaranteed. Quick Service. Low Prices.

AUTO RADIATOR CO.

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We are the only radiator manufacturers in Chicago making a square tube radiator. New guaranteed cores placed in old radiators. We also manufacture Hoods, Fenders, Tanks and Pans and do guaranteed repair work. Prompt service.

Eureka Diamond Honeycomb Radiators

FOR ANY MAKE OF CAR

For Ford Cars—Absolute Satisfaction Guaranteed—the BEST that money and brains can produce—V Type in polished brass and nickel—Flat face in polished brass and nickel. Lowest prices on the market. Discount to jobbers and the trade.

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ONLY RADIATOR FACTORY IN NORTHWEST

Pioneer manufacturer. Why send your radiator down east when you can ship it to us, save time, expense, freight, money and get best workmanship? Prices right. Make new radiators, allow for old one.

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AUTO RADIATORS MANUFACTURED

for any make of car

RADIATORS REPAIRED

Leaking and wrecked radiators made equal to new. New cores or any part fitted in any radiator. Hoods, Fenders, Tanks made to order. **GUARANTEED WORK—QUICK SERVICE**
Write for prices. Phone Haymarket 4087.

The Clearing House—continued.

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Any make or style. We are specialists and guarantee satisfaction. Out-of-town orders receive prompt attention. **F. C. ROHDE, 4135 Olive St., St. Louis, Mo.**

W(RIGHT) RADIATORS

Have stood the test of years—most durable and efficient. Get the best at less cost than others. Don't order until you send for our prices, and illustration of construction. Honeycomb and Bridge Fin Types (tubular). All standard makes in stock. Exceptionally low price on Fords. Dealer's discount.

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A. A. A. SCORED CYLINDERS
Repaired by electricity. Filled with silver composition. Same piston and rings used. No warping of cylinders. Also welding.
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Everready Automatic Engine Starter. General machine work for foreign and American cars. Welding of all metals. Manufacturer Catelain Hose Coupling.
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"BUTLER'S SPECIAL ALLOY PISTONS"

Only one-third the weight of cast iron. Eliminate vibration, noise, wear and tear on bearings, and car. Higher efficiency, easier cranked, quicker pickup, more speed, less carbon. Set of pistons for Fords delivered \$25 guaranteed. The greatest improvement possible for the FORD. Cylinders ground and fitted with Standard or Special Alloy Pistons. Oxy-Acetylene Welding.
BUTLER MFG. CO.
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Crankshafts, Crankcases, Connecting Rods, pistons, scored cylinders made equal to new with our New Silver Iron process—use the same piston and rings.
POWELL-ELLIOTT AUTO REPAIR CO.
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Cylinders ground and fitted with new pistons and rings. Most completely equipped shop in the west. Patterns free. Guaranteed work. Quick service.

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Either cast iron pistons and rings or our special light alloy pistons and rings furnished. State make of car in writing.

STAFFORD MOTOR CO.
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30x3 1/2...2.50	3.75	34x4 1/2...3.60	6.50
31x3 1/2...2.60	4.25	35x4 1/2...3.70	7.00
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32x3 1/2...	6.00	34x4 1/2...	9.00
34x3 1/2...	7.00	35x4 1/2...	9.00
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30x3 1/2...	6.50	2.15	36x4...	10.00	3.35
31x3 1/2...	7.25	2.20	34x4 1/2...	12.00	4.00
32x3 1/2...	7.50	2.25	35x4 1/2...	12.50	4.10
34x3 1/2...	8.00	2.35	36x4 1/2...	13.50	4.15
30x4...	8.50	2.85	37x4 1/2...	14.00	4.25
31x4...	8.75	2.95	36x5...	15.00	4.95
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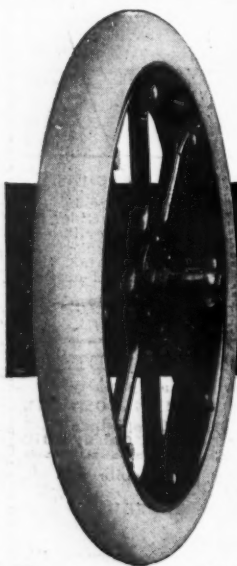
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The Prest-O-Lite Co., Inc. The World's Largest Makers
of Dissolved Acetylene
233 Speedway, Indianapolis, Ind.
Prest-O-Lite Exchange Agencies Everywhere

The Car for the
Progressive
Dealer

Stearns

KNIGHT TYPE MOTOR
Light Four Model

\$1395

This high grade motor car sold last year at \$1750, and at that price embodied the greatest values in modern motor car construction at the lowest price ever quoted.

It was the first Knight motored car to sell under \$2000—and at the quoted price embodied a Stearns built Knight type motor combined with the final development of the famous Stearns chassis.

Up to the introduction of this model, Stearns-Knight cars were only possible to the man of means, and in offering this car at \$1750 we established a new standard in high grade motor car practice.

Our purpose was to test the sincerity of the demand for such cars at a moderate price—and we produced this model in limited quantities only—sufficient to warrant the quoted price.

Before half the season had passed our dealers' business had more than doubled—one dealer in six months, made actual deliveries amounting to a half million dollars. We were convinced of the success of this model, and immediately began to plan the production of this popular car in greater numbers.

Additional factory space and the finest equipment make it possible to produce this model in increased quantities—thus lowering the cost of production without loss of quality to meet the new quoted price—\$1395.

At this price we offer the dealer, with even the most exacting trade, the opportunity to increase his business with a Stearns quality car—which regardless of kind of power plant or any other selling argument is the equal of any \$5000 car ever built, in performance and workmanship.

Successful dealers, enthusiastic owners, and the most prosperous year of our nineteen in the industry, are the evidence of the tremendous popularity of this model. It was designed and is built entirely in our own shops, and is backed by Stearns' reputation for quality.

Some good territory is still open for progressive dealers.

THE F. B. STEARNS COMPANY

CLEVELAND, OHIO

HOUK QUICK CHANGE **WIRE WHEELS**

as standard equipment give you selling arguments of unquestioned strength.

HOUK MFG. COMPANY

BUFFALO, NEW YORK

BRANCHES:

Chicago, 2337 Michigan Blvd. New York, 1792 Broadway. San Francisco, Hews Bldg.

No two people think alike, and there may be a wide variation between the reasons why two men buy the same kind of a car.

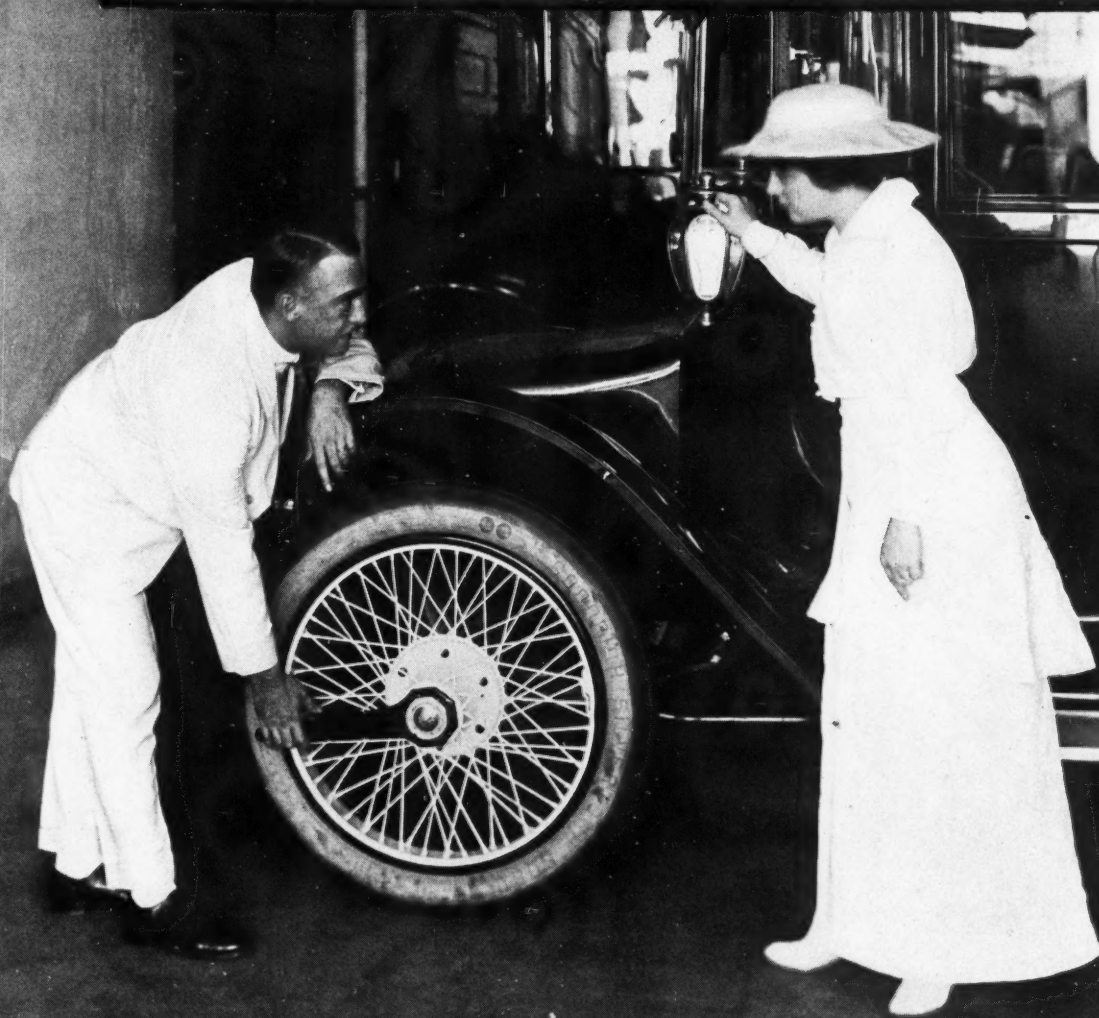
One may not care for a wire wheel equipment, but your arguments on the strength they possess—the comfort they give—the convenience and economy they beget will quickly change his mind.

Another may not care one way or another, but once the merits and advantages of wire wheels are explained he becomes a wire wheel enthusiast for life.

By far the great majority of car owners and prospective owners prefer

HOUK "QUICK CHANGE" WIRE WHEELS

By sheer merit they have become standard equipment on many American cars. If not on those you sell, you will find your manufacturer receptive to your suggestions and recommendations to standardize them. We urge this as much for your benefit as for our own.





This car
— with this additional limousine top
— all for \$950

f. o. b. Toledo

Overland Model 83 with this Detachable Limousine Top makes a most comfortable and attractive closed car.

In warm weather you have your touring car, with one man top, windshield and side curtains.

In cold weather you have a comfortable limousine.

There are four wide, full length limousine doors, with windows that open and close easily. The other windows are also large, making the interior light and pleasant.

For inside light at night there is a nickel-framed electric dome over the tonneau controlled by a switch on the right seat arm.

The interior is trimmed throughout, sides, back and ceiling with rich gray cloth in harmony with the upholstery. Dainty silk draperies are at the rear side windows and a roll-up curtain at the rear window.

This top was *designed with the car*. It belongs to the car and looks as if it belonged there.

Ask the Overland dealer in your city to show you Model 83 with the Limousine Top.

Or—if you already have an Overland Model 83, the top can be *supplied separately*.

Limousine top for Model 83 Touring Car.....	\$200 F. O. B. Toledo
Coupe top for Model 83 Roadster.....	\$150 F. O. B. Toledo

"Made in U. S. A."

Write for an illustrated folder descriptive of the Detachable Limousine Top.
Please address Dept. 478.



The Willys-Overland Company, Toledo, Ohio

Also Manufacturers of Willys-Knight Automobiles

